# Quantitative Value Investing

A practitioner's approach
to stock valuation

Sharad S Ramnarayanan

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*Dedicated*

*To my family*

*"Many shall be restored that now are fallen and many shall fall that now are in honor."*

Horace

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## *A practitioner's approach to stock valuation*

# Acknowledgements

This book depicts my thoughts on valuing stocks using quantitative techniques. Experienced value investors spend time understanding the business, and they can, thanks to their experience, assess the attractiveness or otherwise of a stock using their intuitive capabilities. I have always felt that quantifying this intuitive assessment can lead to better judgements. Is there an approach that can add quantitative rigour to the investment process? This book is an outcome of my quest for such an approach.

I express my sincerest thanks to Professor Sanjay Bakshi, who taught me the course *Security Analysis and Business Valuation* at Management Development Institute, Gurgaon, where I did my PGDM with a specialization in Finance. Professor Bakshi introduced me to the world of investing. Thanks to him, Benjamin Graham, Warren Buffett, Charlie Munger, Peter Lynch, Nassim Taleb, Joel Greenblatt, Mohnish Pabrai, and many more investing legends became my tutors through their writings. Later, after finishing the course, I was lucky to again associate with his investment firms. We meet many people during our lifetime, but the number of people who completely change the course of your remaining life is probably only a handful. I would say that Professor Bakshi is one such person who has had a lasting influence on my investment journey and hence, my life. The frameworks that I discuss in this book are undoubtedly influenced by what Professor Bakshi has taught me in the class and outside of it through his interactions, interviews, writings, tweets etc. Max Gunther talks about luck, which we often fail to acknowledge in life. Missing the cut-off marks to study at one of the Indian Institutes of Management and eventually landing at MDI was probably one such stroke of luck in my life.

In the initial decade of my career as an investment professional, I had the opportunity to collaborate with many stalwarts. In my stint at Aditya Birla Sunlife Asset Management Company, I learned a lot from the many doyens of the Indian asset management industry. I was privileged to work under Mr A Balasubramanian, probably one of the most street-smart investors in the country today. I started as a pure Grahamian style investor who got excited about spotting stocks with low P/E and low P/B. I learnt the concept of growth investing from

Mr Nishid Shah. Equanimity is probably the most important trait required for a fund manager, and erudite Mr Navneet Munot, one of the finest investment brains in the country, is a walking example of this.

Later, at Pari Washington Company Advisors Pvt. Ltd. I worked under Mr Chellappa, who, through detailed quantitative models, taught me to convert the esoteric concept called intrinsic value into numbers. His approach to valuation has had an immense influence on my investment journey. Again, at Pari Washington, I had the privilege to work under Mr Arun Veerappan. Diligence was what impressed me the most about Mr Veerappan. If I look back, I see that each fund manager had a unique approach, but all of them were phenomenally successful. I concluded that there is no one right way. There are many paths to investment success.

I thank all my ex-colleagues who have contributed to the investment knowledge I have garnered over the years. Thank you, Nishit Dholakia, Jagpreet Bhatia, Ankur Jain, Arunabharathi, Mahesh Patil, Abhijeet Sarkar, Arpit Ranka, Ankit Sancheti and many more.

During the latter half of my career, I started feeling that investment is not a full-time job and changed my career path. However, I continued to be an active do it yourself, investor. Internet proliferation also led to some fantastic resources for individual investors. I thank the brilliant brains behind the following fabulous websites:

- www.screener.in
- www.trendlyne.com
- https://forum.valuepickr.com/

Thanks for providing valuable inputs at the click of the button. You are doing a fantastic job to empower individual investors.

I thank my parents, wife, and my two wonderful sons for allowing me to spend so many hours on this book, which I could have spent with them otherwise. Without their unwavering support and affection, this book would not have seen the light of the day. I thank my sister and her wonderful family for the moral support they have provided me all these years. To my family, I owe much more than this book.

# Introduction

Legendary investor Peter Lynch said, *"Investing in stocks is an art, not a science, and people who've been trained to rigidly quantify everything have a big disadvantage."* In this book, I am trying to achieve what Lynch said was tough, and the challenge is daunting. I agree that the analysis of a business, its competitive position, and growth prospects may be an art, but the decision to invest or not after you are convinced about the business depends on the price at which the stock is available. As Lou Simpson said, *"We try to be disciplined in the price we pay for ownership even in a demonstrably superior business. Even the world's greatest business is not a good investment if the price is too high."*

Recently I analysed the performance of forty large-cap mutual funds in the Indian equity market. I sourced the data from the website www.moneycontrol.com. The return for the five years ending 30th November 2021 for the top twenty funds is as follows:

| Fund | 5 Year Annualised Return |
|---|---|
| Fund_1 | 19.60% |
| Fund_2 | 18.56% |
| Fund_3 | 17.23% |
| Fund_4 | 17.14% |
| Fund_5 | 16.21% |
| Fund_6 | 16.21% |
| Fund_7 | 16.09% |
| Fund_8 | 16.00% |
| Fund_9 | 15.84% |
| Fund_10 | 15.84% |
| Fund_11 | 15.34% |
| Fund_12 | 15.24% |
| Fund_13 | 15.08% |
| Fund_14 | 14.91% |
| Fund_15 | 14.86% |
| Fund_16 | 14.58% |
| Fund_17 | 14.50% |
| Fund_18 | 14.40% |
| Fund_19 | 14.23% |
| Fund_20 | 13.90% |

The benchmark NIFTY50 index delivered an annualized return of 17.4% during the same period. Only two funds did better than NIFTY50. Is it not surprising that only two out of the forty funds could deliver market-beating returns over five years? Despite this inferior performance, all these fund managers charge about 2% of the assets under management (AUM) as the expense ratio. While prima facie 2% of AUM looks small if you compare it to the return on investment that the funds have achieved, it works out to nearly 10% to 15% of the return.

Asset management is a fascinating business. Almost every fund house has a large bouquet of funds to offer the investors. At any point in time, there will be some themes doing well. Hence, every fund house will always have a few top-performing funds to sell to the investors at any point in time. What is also surprising is the superior returns that

the asset management companies themselves generate. Despite more than forty asset management companies that offer undifferentiated products, most of them deliver an extremely healthy return on equity. Compare it to any industry with many players. Unless a company offers a differentiated product or is a cost leader, it will be lucky to generate a reasonable return on equity except in favourable cycles. Look at the asset management companies. All of them offer the same kinds of funds. Highly qualified people (MBAs from premier institutions, CFA charter holders, or Chartered Accountants) manage the funds. Still, almost all the funds underperform the benchmark index. A sizable portion of the return that the investors forego in the form of expense ensures that the asset management companies generate excellent profits on the little capital that the owners have deployed in the business.

On an aggregate basis, the asset management companies have probably done a disservice to the investors. The story is similar all over the world. Most investors were better off investing in index funds. Jeff Bezos of Amazon said, *"Your margin is my opportunity."* The return on equity that the fund houses generate should attract competitors, who will offer products at a much lower cost. The proportion of passive funds as a percentage of total AUM at the industry level should also increase as the fund houses will continue to generate sub-optimal returns.

I belong to the school that investing in low-cost index funds will give satisfactory overall results for most investors. However, there exists a category of enterprising investors who would prefer to invest themselves. This book intends to provide some good valuation frameworks to such enterprising investors. Unlike fund managers of asset management companies, the enterprising investor is not bound by the constraints of short-term performance, risk of deviating from the benchmark, or funds that are too large to handle.

So, are you an enterprising investor? You can answer this question only if you know who an enterprising investor is? Benjamin Graham, the father of value investing, defines the enterprising investor as someone who will "*devote a fair amount of his attention and efforts toward obtaining a better than run-of-the-mill investment result.*" The enterprising investor should have a passion for investing. He should have a basic understanding of finance and valuation-related terminologies. So, if you are looking for a basic beginner's book on investing in the stock market then this book is not for you. I have not added any appendix to this book that has the definitions of commonly used financial terms and acronyms. You will also not find any sections on analysing the income statement, balance sheet or cash flow

statement. I had an option to add a few of these sections to make this book reach the so-called standard size. I decided against it as I feel cutting the fluff out will be a better use of your time and my time.

The enterprising investor needs to commit time to monitor his investments, look for new ideas, and analyse the upside potential and downside risk of the stocks he has analysed. He should monitor the stocks in his portfolio, identify new stocks to buy, change the weights of existing positions and sell current holdings where valuations have run ahead of fundamentals.

Recently one such group of enterprising investors approached me with a request. The group was comfortable with understanding the fundamentals of a business that fell within their circle of competence. They wanted a quantitative approach to estimating the fair value of a stock. Estimation of the fair value of a stock in academic finance mostly begins and ends with the discounted free cash flow model. Academic finance goes to extreme lengths to complicate this basic approach. This group of investors were specific. They wanted to know whether alternate quantitative techniques are available.

I put a structure to the various valuation approaches that I have used over the last two decades and identified the ones that worked reasonably well for me. I delivered a series of presentations to the investor group outlining the various approaches that I have found useful. The notes that I prepared for addressing this group triggered the idea for this book. Through this book, I felt I can share my learnings with a much larger group of enterprising investors. Learning from vicarious experiences considerably shortens the learning curve, and I hope readers can benefit from this book that distils my experience over the last two decades.

This book aims to provide you with valuation frameworks with built-in safety cushions that may help you not overpay for securities. For example, when you see a person, it is difficult to predict his exact weight. But you can predict reasonably accurately whether the person is more than 90 kgs. Similarly, the frameworks discussed in this book are there to provide you with some ideas to assess what a business is worth, based on a particular set of assumptions about the business you are comfortable with.

This is a book by an investor for the investors. Hence, the theoretical principles underlying the valuation models are kept to a minimum, and illustrations are done using real-world recent examples, primarily from the Indian market. What you will find in this book is a practitioner's approach, which can help you improve your conceptual understanding of valuation through the examples discussed.

Stock valuation is more of an art than science, which is why behind every transaction there is a seller who feels the price is right to sell and a buyer who feels the price is right to buy. The frameworks discussed are not going to provide you with a magic formula that gives the exact buy price or sell price of a stock. It just tries to replace the vague idea called *value* with a range of possible prices for different assumptions. This can help you realize what you are buying into when you buy a stock at a particular price.

The two primary drivers of the value of a business are, return on invested capital and the growth in earnings. While these are the two primary factors that create value for the business, the return that you make by investing in this business depends on the price that you pay for it. Good investing is all about getting the mix of all these three factors right.

The Indian market is witnessing a disturbing trend of late. Many investors are increasingly accepting a fallacious premise that if the business is of high quality, which is defined as a reasonable free cash flow growth with a reasonably high return on equity, then no price is too high. These *buy at any price* perpetrators lend authenticity to their theory by using one of Charlie Munger's quotes, "*Over the long term, it is hard for a stock to earn a much better return than the business which underlies it earns. If the business earns 6% on capital over 40 years and you hold it for those 40 years, you are not going to make much different than a 6% return—even if you originally buy it at a huge discount. Conversely, if a business earns 18% on capital over 20 or 30 years, even if you pay an expensive looking price, you will end up with a fine result.*" The operative words here are "an expensive looking." I am fairly sure that Charlie Munger would not, even in his dream allow the substitution of "an expensive-looking" with the word "any."

The approaches suggested in this book are an attempt to get the right blend of these three factors - return on capital, earnings growth, and the price you pay by using quantitative techniques. For example, you know that if everything else remains the same, a higher ROE is desirable compared to a lower ROE. But if you are comparing two businesses how much more should you pay per unit of incremental ROE? For example, if one business operates at 18% ROE and another one operates at 15% ROE how much more can you pay the former in terms of P/B or P/E multiple is a question we will try to address in this book. We will also see how to incorporate the profit growth into the valuation. For example, if presented with a 20% ROE business with 4% growth versus a 16% ROE business growing at 10%, how can you compare the price you can pay for the two businesses?

We will also address the tricky question of valuing high growth

companies, where growth is much more than the required rate of return. Such stocks usually sell at high valuations. DCF approach becomes error-prone in such cases as high growth is often accompanied by reinvestment of capital which impacts free cash flows. This leads to a large part of value depending on terminal value estimate many years out. The farther you go from the present the more is the uncertainty. Then how do you appraise the value for such cases? This book can provide some insights.

Benjamin Graham's timeless investment principle is to buy at a discount to the intrinsic value. The discipline ensures that you have an adequate margin of safety. But how can you quantify the intrinsic value and the margin of safety? The approaches in this book can provide you with some insights in this regard.

But let me warn you, this book is just going to provide you with valuation frameworks, which can give guidance as to what the fair value of a stock is and protect you from overpaying. I am not giving you any magic formula that can identify multi-baggers. If I did have the magic formula that can correctly predict winners, I would be insane to share the secret sauce with you. If knowledge of valuation frameworks is the only thing needed for investment success, then Aswath Damodaran should have been several times richer than Warren Buffett.

Many books talk about how to identify the right companies to invest in. But the critical issue of position sizing is not covered in most books. Discussions on position sizing are often relegated to books on stock trading rather than investing. While you may often have a fair idea of what to buy, how much to buy is an equally critical question that needs to be answered. The size of the individual positions decides what return your portfolio will generate. If you use a scattergun approach and spread yourself too thin, you will end up with a few multi-baggers, but your portfolio would probably deliver returns close to market returns. Your success as an investor is not determined by how many stocks delivered outsized returns. Success depends on the return that your investment portfolio has generated. I am discussing position sizing also in this book in some detail.

Coming to the structure, I have briefly touched upon some of the theoretical aspects essential to understanding the frameworks. I will be relying on case studies to illustrate the concepts and how to apply the frameworks. The case studies will be predominantly on companies listed in Indian stock markets. I am neither going to reveal the names of the companies nor am I going to recommend at the end of the case discussion whether it is an attractive opportunity or not. Let me caution you – I am not a SEBI registered advisor. I am sure some of

you can use the data about the company given in the book to identify the company that is discussed. But let me reiterate that the companies chosen for analysis are for illustration only. I will also offer a disclaimer that I may or may not have investments in the stocks discussed. I can only assure you that I have analysed the companies specifically to author this book. I have tried to use live case studies (at the time of writing) as much as possible. I have also consciously tried to avoid using my earlier successful investments and attributing the cause of success to what I thought about the stock at the time of investing. I am doing it to remove the hindsight bias. This means that the companies discussed may or may not be successful in the future. It is just used to share my thinking at the time of authoring this book. By the time you are reading this book, the situation would, in all probabilities be dramatically different for the companies discussed. So, welcome to quantitative value investing. Let me wish you all an enlightening journey.

# A few approaches to quantitative investing

Most value-investing books focus on the individual experiences of the authors. They describe their past successful investments, and what prompted them to buy what they bought. Advice on why it is essential to buy with a margin of safety, how to do the fundamental analysis to identify companies with a competitive advantage, and the required mental makeup to embrace the value philosophy are also covered in detail. Books that provide implementable frameworks are few and far in between. I highlight in this chapter a few books that have provided interesting quantitative approaches to stock picking.

I begin with Benjamin Graham, who went out of the way to provide the individual investors with formulae to pick stocks. He was probably one of the first investors who wanted to democratize the art of stock picking. In his books *Security Analysis,* and *The Intelligent Investor,* he discusses how to analyse a company's financials from a valuation point of view. I am a huge fan of Graham's approach of comparing two companies coming one after another in a list of stocks arranged alphabetically. He talks about quantitative approaches like the requirement of dividend yield to be at least $2/3^{rd}$ of AAA bond yield, and underutilised debt capacity where the value of an enterprise should be at least as much as the debt that it can comfortably support. He was trying to provide simple approaches that the individual investors could use. He was never very keen on meeting the company management as he believed that the management's actions and the nature of the business reflect in the financial statements. One of the most famous formulas that Graham provided was the one to value growth stocks. He calculated the per-share value of a growth stock as:

$$V = EPS \times (8.5 + 2g)$$

He ascribed a zero growth PE ratio of 8.5 times. He added twice the expected growth over the next 7-10 years to this no-growth PE ratio to arrive at the value of the company. Interestingly, the formula does not consider the capital efficiency of the company.

Graham later added a multiplier - 4.4/Y to adjust for the interest rate cycle prevalent at the time of valuation. 4.4 was the average yield of AAA corporate bonds, and Y was the yield of bonds prevailing at the

time. As the yield on risk-free assets increases, the equity value should decrease and vice versa. Graham was able to capture this aspect of valuation using this simple tweak.

Graham's protégé Warren Buffett extended this approach. However, Buffett paid attention to capital efficiency and earnings quality. In the book *The Warren Buffett Way*, Robert G Hagstrom provides insights into how Buffett would have probably approached some of his investments like Coca Cola, Washington Post, Wells Fargo, or Gillette. The approach was quite simple. Estimate the owner-earning of the company. Owner-earning is the earnings plus non-cash items like depreciation and amortization, less the capital expenditure required for maintaining the competitive advantage. Buffett prefers to use the risk-free rate for discounting and then buy with a margin of safety. Hagstrom calculates the value of the companies in which Buffett invested using a multistage DCF of owner earnings and estimates the implied growth required to justify the purchase.

Joel Greenblatt transformed Buffett's tenet to buy stocks with a competitive advantage at a reasonable price into a simple formula. Greenblatt elaborates his technique in his book, *The Little Book that beats the market*. He took return on capital as a proxy for the quality of the business and earnings yield as a proxy for valuation. By the time Greenblatt's approach came, stock screeners had become popular, and he converted the two factors into what he called the magic formula. His method involved the following steps:

- Run a stock screen to rank the companies above a chosen market capitalisation threshold to capture their earnings yield and return on capital.
- Estimate the rank of the company in terms of earnings yield and return on capital – 1 being the most attractive.
- Arrive at a consolidated rank for each company by adding the ranks for earnings yield and return on capital.
- Sort the list of companies in ascending order based on the consolidated rank.
- Invest in the top 20-30 companies.
- Repeat the exercise every year and readjust the portfolio.

While blindly investing based on this simple formula has given some good returns in the past, using it more as a screener to deep dive into fresh ideas is probably more prudent. This is because many companies with poor earnings quality, corporate governance issues and commodity companies at the wrong end of the cycle often feature predominantly at the top of the screen.

Renowned professor of value investing, Bruce Greenwald popularized

an approach called earnings power value which is explained in his book *Value Investing: From Graham to Buffett and Beyond*. In this approach, the reported earnings are adjusted for one-off items, normalized margins, normalized tax rate, and actual maintenance capital expenditures to arrive at the adjusted earnings. The adjusted earnings divided by the weighted average cost of capital gives the earnings power value of the business operations. Add the surplus net assets we get the earnings power value of the company. By subtracting the company's borrowings, we get the value of the company's equity. The approach can be modified to adjust for expected future growth.

Tobias Carlisle, in his book *The Acquirer's Multiple*, emphasises the importance of mean reversion as the core tenet on which deep value investing works. Through back testing, he demonstrates that simply using the ratio of enterprise value to operating earnings to pick stocks could beat the returns of Magic Formula and S&P500. The approach is based on the principle that investors may not always be able to select companies where the high return on capital is sustainable. Human beings find the concept of extrapolation easier than mean reversion. So, buying based on the cheapness of earnings can ensure more margin of safety for the investors and a greater chance to benefit from the mean reversion of return on capital.

*What Works on Wall Street: The Classic Guide to the Best-Performing Investment Strategies of All Time* by James O'Shaughnessy is also an interesting book in which the author evaluates the effectiveness of various quantitative approaches through back testing. It is a difficult read, and there is also some criticism that the approaches described in the book works only in back testing and not prospectively. However, it does give a lot of ideas for you to experiment with and shortlist companies for further research.

In the book *Active Value Investing: Making Money in Range-Bound Markets*, Vitaliy N. Katsenelson talks about the Quality Value Growth framework or the QVG framework to estimate what could be the right P/E that can be paid for a company. Katsenelson's approach begins with a no-growth P/E multiple, which is adjusted for earnings growth, dividend yield, earnings visibility, financial risk, and business risk. Katsenelson suggests that the approach works well in range-bound markets. He also says that the P/E versus growth follows a non-linear relationship with the market willing to pay a much higher P/E for every incremental unit of growth.

If you are looking for academic rigour, then *Valuation: Measuring and Managing the Value of Companies* by McKinsey & Company and books by Aswath Damodaran can provide the theoretical foundation upon which most valuation techniques are built. However, this extent of

academic rigour may not be warranted from a practitioner's point of view.

We do not have too many books written in the Indian context especially covering the quantitative aspects.

In this book, I have tried to use approaches that are quite different from the approaches discussed in the books mentioned above. I have also tried to use real-life data to apply the frameworks that I have discussed.

# Significance of Return on Equity (ROE)

One of the two drivers of the value created by a company for shareholders is its return on equity (ROE). The ROE tells us how efficiently a company uses the capital that the shareholders have invested. Please note that this is different from the purchase price of the investor. When an investor purchases a stock, the money is transferred from the buyer to the seller. It does not come to the company. ROE indicates the profitability of the company vis-a-vis the amount that the shareholders have invested in the company.

When a company generates profit, the board, which represents the interests of the shareholders, can decide to distribute some part of the profit to the investors in the form of dividends or buybacks and reinvest the remaining amount to fund future growth. The earnings retained in the business are also considered a part of the amount invested by the shareholders. In other words, we can assume that the company has distributed all its earnings to the shareholders, and they have reinvested an amount equal to the retained earnings back into the business.

If ROE is high, investors generally pay a higher price for every rupee of shareholder capital invested in the company. The drivers of ROE are broken down into their components by the Dupont Model:

ROE = profit margin x asset turnover x financial leverage

In other words

$$ROE = \frac{Net\ Income}{Sales} \times \frac{Sales}{Total\ Assets} \times \frac{Assets}{Shareholder's\ equity}$$

The splitting of ROE into these three components is particularly useful because it is essential to understand what will drive the future ROE of the company. Profit margin indicates how much profit the business makes per unit of sales. A higher profit margin leads to higher ROE. Profit margin can increase if the company can increase the price of its product without a proportionate increase in cost or if it can reduce the per-unit cost of the product.

Asset turnover tells the investor how efficiently the assets are utilized

to generate sales. We see a high asset turnover ratio usually in companies where the margin is low. The retail industry is an example of an industry where the margin is low, but the asset turnover ratio is high. We see high margins in companies where asset turnover is low. The hotel industry is an example of an industry where the asset turnover is low, but the margin is high. If a company is currently using only 50% of its capacity and has scope to increase it to say 75%, then the increase in asset turnover can be an ROE driver. But if a company is already close to its maximum capacity utilisation, then the scope for further increase in ROE due to this factor is limited as incremental sales can come only when new capacity is added. ROE can decrease while the ramp-up of new capacity happens.

Let us take a company that runs a radio station for example. The company has invested capital to acquire the right to operate a radio channel. The company has at its disposal, every day, minutes which can be sold to advertisers. If there is a high demand and the entire inventory available is almost sold out, then the company can start demanding higher rates per minute. Charging a higher rate per minute helps the company increase its profit and hence the ROE, without any incremental capital deployment.

There may also be a situation where the company is slowly ramping up a new station. The company could sell only say 55% of its available inventory in one year. In the next year, assume that the company could sell 75% of available inventory without changing its rate. Here incremental profit is generated without incremental costs as the asset turnover has increased. The two actions are not mutually exclusive. The company would try to attain a balance between the per-unit economics and capacity utilisation so that the company level ROE is maximised.

Finally, the presence of debt on the balance sheet can enhance the ROE. When debt is used as a source of capital it leads to tax-deductible interest costs. The cost of debt net of tax shield is lower than the cost of equity. It leads to less utilization of shareholder funds and enhances the ROE. If there is an increase in ROE due to financial leverage, then it needs to be analysed carefully. Higher debt levels lead to higher risk levels associated with the company. When comparing two similar companies in the same industry, examine if the superior ROE enjoyed by one company compared to another is due to any operational advantage or the use of financial leverage. It is always good to approach companies with a discomforting level of leverage with a high degree of caution. There may also be situations when the company progressively pays down debt. A profitable company may report a higher ROE when the leverage is high. If the company

generates profits and progressively reduces the proportion of debt in the capital structure, then the ROE can start decreasing. You must not get carried away by the reported ROE that is enhanced due to the use of leverage. How to adjust for such situations will be explained in the later chapters.

The ROE is calculated as the ratio of net profit to net worth. i.e.

$$ROE = \frac{Profit}{Networth}$$

In the following table, I have presented the ROE movement of a company over the last many years:

|  | FY14 | FY15 | FY16 | FY17 | FY18 | FY19 | FY20 | FY21 |
|---|---|---|---|---|---|---|---|---|
| Net Profit | 5 | 6 | 7 | 8 | 9 | 7 | 11 | 11 |
| Share Capital | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 |
| Reserves | 44 | 48 | 54 | 62 | 69 | 75 | 84 | 94 |
| Net worth | 49 | 53 | 59 | 67 | 74 | 80 | 89 | 99 |
| ROE % |  | 12.24% | 13.21% | 13.56% | 13.43% | 9.46% | 13.75% | 12.36% |

So, 6/49 = 12.24%, 7/53 = 13.21% and we repeat the steps. Some practitioners prefer to calculate return on average equity or ROAE where the denominator is replaced by the average of beginning and end net worth. For FY21, for example, the ROE is 11/89 = 12.36% while ROAE is 11/{(89+99)/2} = 11.7%.

You can also compute the mean ROE for the period. Again, some practitioners prefer using the geometric mean rather than the arithmetic mean.

$$Mean\ ROE = \left\{ \prod_{i=1}^{i=n} (1 + ROE_i) \right\}^{\frac{1}{n}} - 1$$

In the above example the geometric mean ROE = 12.56% which is arrived at as follows:

{(1+0.1224)x(1+0.1321)x(1+0.1356)x(1+0.0946)x(1+0.1375)x(1+0.12
$^{1/7}$ - 1

The geometric mean is particularly helpful when results are volatile, and the data series is continuous.

For example, consider the following numbers:

| Year | Return | Value |
|------|--------|-------|
| 0 | | 100 |
| 1 | 15% | 115 |
| 2 | 25% | 143.75 |
| 3 | -50% | 71.875 |
| 4 | 10% | 79.0625 |

While the arithmetic mean of returns is zero, the geometric mean is -5.7%. The geometric mean is a better indicator of the actual returns than the arithmetic mean.

The ROE helps you estimate the sustainable growth of a company that can be achieved over time without additional capital infusion. Mature companies usually operate at reasonably stable ROEs over time. The ROE gets established not only for the company but also for the industry so long as there are no external disruptions.

In today's digital world it has become more important to understand the per-unit economics of a business. Accounting has probably not caught up with business realities. A valuation exercise requires an understanding of the sustainable ROE of the business. Let me give an example. Assume that there is a subscription business. The business spends quite a bit to acquire a customer. Once acquired, the customer on average stays for seven years. The company is adding customers at a rapid pace. Suppose the company spends Rs 25 to acquire a customer. The customer is expected to pay a subscription fee of Rs 10 for seven years. The per-customer IRR works out to about 35%. In the second year, the company acquires two customers, and in year three, another two customers. The income statement will look like this:

| | Year 0 | Year 1 | Year 2 |
|------|--------|--------|--------|
| No. of customers at the start | 0 | 1 | 3 |
| Revenue | 0 | 10 | 30 |
| Expense | 25 | 50 | 50 |
| Profit | -25 | -40 | -20 |
| No. of customers at the end | 1 | 3 | 5 |

We can see that despite good per-unit economics the reported profits are negative. The assessment of ROE based on reported numbers hence becomes difficult. As an investor, you will have to upskill your ability to dig deep into the business models and understand what the long-term sustainable ROE of a company is going to be. Traditional value investors may still prefer to take the uncomplicated way out by focusing on established companies with a good history. This reduces the extent of guessing required about the business prospects. We will

not be discussing the new-age companies in this book. The focus will be on companies where traditional accounting techniques give a reasonably good picture.

Let us now get into why ROE is critical in business analysis.

In the following table, I have given details of a hypothetical company with an ROE of 15%. Let us assume that the company is targeting to grow the PAT at a rate of 15% per annum.

| Year | Net worth Start | ROE | PAT | Net worth at end | Target PAT for next year | Net worth at the end needed for target PAT | Surplus/ Deficit |
|---|---|---|---|---|---|---|---|
| 1 | 100 | 15% | 15 | 115 | 17.25 | 115 | - |
| 2 | 115 | 15% | 17.25 | 132.25 | 19.84 | 132.25 | - |
| 3 | 132.25 | 15% | 19.84 | 152.09 | 22.81 | 152.09 | - |
| 4 | 152.09 | 15% | 22.81 | 174.9 | 26.24 | 174.9 | - |
| 5 | 174.9 | 15% | 26.24 | 201.14 | 30.17 | 201.14 | - |

In the first year, the company generates a profit of 15 on a beginning net worth of 100. In the next year, the company is targeting a profit of $15*1.15 = 17.25$. With a 15% ROE, the capital needed is $17.25/0.15 = 115$. This is equal to the starting net worth of 100 plus the profit generated of 15. There is neither any surplus nor deficit. Extending the argument, in the next year the company targets $17.25*1.15 = 19.84$ as profit. For this, it needs a capital of $19.84/0.15 = 132.25$, which is equal to $115+17.25$ and we repeat the steps. When a company grows at the same rate as ROE then it requires no capital infusion. What if the target growth is only 10% but ROE is 15%? Let us see.

| Year | Net worth Start | ROE | PAT | Net worth at the end | Target PAT for next year | Net worth at the end needed for target PAT | Surplus/ Deficit |
|---|---|---|---|---|---|---|---|
| 1 | 100 | 15% | 15 | 115 | 16.5 | 110 | 5 |
| 2 | 110 | 15% | 16.5 | 126.5 | 18.15 | 121 | 5.5 |
| 3 | 121 | 15% | 18.15 | 139.15 | 19.97 | 133.1 | 6.05 |
| 4 | 133.1 | 15% | 19.97 | 153.07 | 21.96 | 146.41 | 6.66 |
| 5 | 146.41 | 15% | 21.96 | 168.37 | 24.16 | 161.05 | 7.32 |

Here the company generates a profit of 15. But the target profit for next year is only $15*1.1 = 16.5$. For generating a profit of 16.5 the net worth needed is only $16.5/0.15 = 110$. So, the company needs to retain only 10 and the remaining 5 is a surplus that the company can distribute to shareholders. The same logic can be extended to the remaining years. When a company grows at a rate less than the ROE

there will be a distributable surplus.

Now let us see what happens when the growth rate is greater than the ROE. The 15% ROE company wants to grow at 20%.

| Year | Net worth Start | ROE | PAT | Net worth at the end | Target PAT for next year | Net worth at the end needed for target PAT | Surplus/ Deficit |
|------|-----------------|-----|-----|----------------------|--------------------------|---------------------------------------------|------------------|
| 1 | 100 | 15% | 15 | 115 | 18 | 120 | -5 |
| 2 | 120 | 15% | 18 | 138 | 21.6 | 144 | -6 |
| 3 | 144 | 15% | 21.6 | 165.6 | 25.92 | 172.8 | -7.2 |
| 4 | 172.8 | 15% | 25.92 | 198.72 | 31.1 | 207.36 | -8.64 |
| 5 | 207.36 | 15% | 31.1 | 238.46 | 37.32 | 248.83 | -10.37 |

The PAT for the first year is 15 and the targeted PAT for next year is 15*1.2 = 18. The net worth needed to generate this profit is 18/0.15 = 120. The surplus generated is insufficient. Hence, there is a shortfall of 5, which needs to be supplied by the shareholders. A company would need a continuous infusion of growth capital to sustain a growth rate above its ROE.

We discussed that when the growth rate is less than ROE, the company generates a surplus, which the company management can pay to shareholders. Now we will explore the relationship between the ROE and the amount that the company can distribute.

| Net worth Start | PAT at 15% ROE | Net worth at the end needed for sustaining 10% growth | Surplus | Surplus / PAT |
|-----------------|----------------|-------------------------------------------------------|---------|---------------|
| 100 | 15 | 110 | 5 | 1/3 |
| 110 | 16.5 | 121 | 5.5 | 1/3 |
| 121 | 18.15 | 133.1 | 6.05 | 1/3 |
| 133.1 | 19.97 | 146.41 | 6.66 | 1/3 |
| 146.41 | 21.96 | 161.05 | 7.32 | 1/3 |

The growth of 10%, ROE of 15%, and the possible payout ratio of 1/3 are related. ROE is the maximum sustainable growth that happens when all the earnings are retained. In other words, the payout is zero.

So, growth (g) is equal to ROE*proportion of earnings retained. In the above example, the proportion of earnings retained is 2/3. The sustainable growth is 15%*2/3 = 10%.

The proportion of earnings paid out is the payout ratio (b). Since the proportion of earnings retained is equal to (1-(payout ratio)), we can also express the above relationship using the payout ratio as follows:

$$g = ROE \times (1 - b)$$

We can also rearrange it as

$$ROE - g = ROE \times b$$

So, the excess of ROE over the growth is equal to ROE multiplied by the payout ratio. We will be using these relationships further in the coming chapters.

# Deriving the ROE-Growth valuation framework

One of the basic models of stock valuation is the dividend discount model. In the dividend discount model, the fair value of the stock is the present value of all the future dividends that we expect the company to pay. A slight modification of the model is the Gordon Growth Model or GGM. In GGM, we expect the company to pay dividends perpetually. We also assume that the dividend increases by a fixed percentage every year. Let us take a company where we expect the dividend to increase by 5% every year. If the company has paid a dividend of 10 in one year, we expect the company to pay a dividend of 10.5 in the next year, 11.025 in the year after that and we repeat the steps. The next step involves calculating the present value of each dividend payment. For example, if the required rate of return is 12%, the dividend of 11.025 after two years is worth $11.025/1.12^2 = 8.79$ in present value terms. All these present values are aggregated to arrive at the fair value of a stock.

For a stable company that paid a dividend of $D_0$ in the current year and the dividend is expected to grow at a stable rate g, if the required rate of return is r, the price P is derived in the following manner:

$$P = \frac{D_0 \times (1+g)}{(1+r)} + \frac{D_0 \times (1+g)^2}{(1+r)^2} + \frac{D_0 \times (1+g)^3}{(1+r)^3} + \cdots$$

$$\therefore P = \frac{\dfrac{D_0 \times (1+g)}{(1+r)}}{\left(1 - \dfrac{(1+g)}{(1+r)}\right)}$$

$$\therefore P = \frac{\dfrac{D_0 \times (1+g)}{(1+r)}}{\left(\dfrac{(1+r) - (1+g)}{(1+r)}\right)}$$

$$\therefore P = \frac{D_0 \times (1+g)}{(r-g)}$$

In the above derivation, we have implicitly assumed that $\{(1+g)/(1+r)\}$ is less than 1, which can happen only when g is less than r. This is not an unreasonable assumption as the company's growth over time must taper down and go below the required rate of return. In the near term, many companies may grow faster than the required rate of return. In such cases, we use the multistage models. We will come to that part later. However, you can directly apply the model for valuing mature companies that grow at a low and stable rate.

The required rate of return (r) is the minimum amount of return an investor seeks for investing in a stock. In other words, it is the return that you want from the investment. 'r' is a return expectation that varies from one investor to another. For example, an investor from Japan may have a vastly different return expectation compared to an investor from India. There are different approaches you can take to set your return expectation. We will discuss approaches that you can use to set the required rate of return in the next chapter. For this chapter, you may simply assume that the rate used for discounting is equal to the required rate of return.

While the GGM looks very elegant, it may be difficult to apply it in real life, especially in a growing economy like India. In a growing economy, there is a large amount of profit reinvestment happening, and dividend payouts in many cases are low. As companies mature with growth opportunities diminishing, companies increase their dividend payouts. To that extent, it is easier to form a more informed view about the company's earnings growth rather than the growth in dividends. Of course, purists may argue that companies can

manipulate earnings, but cash flows and dividends are less vulnerable to manipulations. But the essence of this book is to provide you with a good handle on valuations that can help you make worthwhile investment decisions. If the earnings numbers are suspect, it does not even qualify as a candidate for investment. Valuation comes at the final stage of investment analysis after you are thoroughly satisfied with the company's business, and corporate governance aspects.

Having a model based on ROE and earnings growth of a company about which you can make an informed judgement based on past records and near-term prospects can be quite insightful. The other model that is in vogue is based on free cash flows. The free cash flow model is quite useful if you are analyzing businesses with little capex requirements and have stable cash flows. Many consumer companies, quasi consumer companies, information technology companies and REITs fall in this category. But what about companies that need to reinvest earnings for growth? It does not make sense to say that you will never invest in a growing working capital-intensive construction company because it will never produce free cash flows.

Let me give you an example of a hypothetical manufacturer of critical components. The components need to be replaced regularly in the machines that the company's customers use. The value proposition provided by the company is that it will always ensure supply of this component just in time, and the customers will have zero downtime due to lack of availability of the component. The company makes a healthy profit margin and a good ROE. The value proposition offered by the company means that the company can ill-afford stockouts and hence needs to maintain an elevated level of inventory which keeps increasing as the company grows. The increase in inventory every year means that free cash flows are affected. Would you treat this company as a high-quality company that keeps reinvesting capital at a high ROE or as a company that is unable to produce free cash flows and hence not worthy of investment?

When companies have negative cash flows or low upfront free cash flows, which forces you to rely too much on the terminal value estimate several years down the line, quite a bit of uncertainty creeps into your estimates if you rely on the free cash flow model. The ROE-growth model on the other hand relies primarily on the reported recent numbers and near-term prospects from an accounting earnings perspective. It is less dependent on the future projections and uncertainty associated with it.

The GGM, which is a dividend-based model, can be converted into an ROE & earnings growth-based model as follows:

$$P = \frac{D_0 \times (1 + g)}{(r - g)}$$

$$P = \frac{D_1}{(r - g)}$$

$$D_1 = PAT_1 \times Payout\ Ratio\ (b)$$

$$PAT_1 = ROE \times Book\ Value\ at\ start\ (BV_0)$$

$$\therefore D_1 = ROE \times BV_0 \times b$$

$$Since\ ROE \times b = (ROE - g)$$

$$D_1 = (ROE - g) \times BV_0$$

$$\therefore P = \frac{(ROE - g) \times BV_0}{(r - g)}$$

$$\frac{P}{BV_0} = \frac{(ROE - g)}{(r - g)}$$

$$If\ \frac{P}{BV_0}\ is\ represented\ as\ PBV\ then$$

$$PBV = \frac{(ROE - g)}{(r - g)}$$

The dividend is a part of the profit after tax that the company pays to the investors. The ratio of the dividend paid to PAT is called the payout ratio. In other words, the dividend is equal to the PAT multiplied by the payout ratio. Since ROE is equal to PAT divided by the net worth or book value of the company, we write PAT as ROE multiplied by the Book Value. This makes the dividend equal to the product of ROE, Book Value, and payout ratio. We learnt previously that the product of ROE and payout ratio is equal to the difference between ROE and the earnings growth. This substitution leads to the result. Do not worry too much about the mathematics here. Focus on the result. This result will be used extensively for estimating the fair value of a stock.

The model is not something new that I have invented. It has been in vogue for a long time. However, academic finance has somehow relegated the model to analyzing only financial companies, where constructing a cash flow statement is not meaningful. For all other businesses, the valuation approach has been discounted cash flows and their variations (FCFF or FCFE). Otherwise, secondary approaches like the multiples-based approach are preferred.

The result primarily applies to mature companies, as the implicit assumption is that the earnings growth expectation is less than the required rate of return. For high growth companies, you need to use a multi-stage model. How to approach high growth companies will be covered later.

The result also leads us to some important conclusions:

a)  For a company to add value to shareholders, the return on equity should be more than the required rate of return. When the ROE is less than 'r' the PBV is less than one, which means that companies that cannot generate returns more than the required rate of return sell at a discount to book value. Growth in such companies will be more value destructive than when there is no growth.

b)  When ROE is more than 'r' the company adds value to shareholders, and PBV will be more than one. Growth in such companies is value accretive for shareholders.

c)  When ROE is equal to 'r', irrespective of the growth rate, the PBV is equal to one.

So, we started with the dividend discount model and its modified form called the Gordon Growth Model, which assumes that the dividend increases at a fixed rate every year. We then tweaked the model and converted it into a model expressed in terms of ROE and earnings growth. Finally, we arrived at a valuation framework to value reasonably mature companies where the growth is less than the required rate of return, which is given by:

$$PBV = \frac{(ROE - g)}{(r - g)}$$

Let me call this the PBV model, which we will use in the coming chapters.

# Setting the required rate of return

Most valuation frameworks use the concept of the present value of future earnings or cash flows in one form or the other. To express the future cash flows in present value terms, we need to discount the future cash flows at an appropriate rate. This discount rate is the investors' required rate of return. Setting the required rate of return is a crucial step in the valuation exercise. We can use multiple approaches to arrive at the required rate of return 'r'.

Academic finance suggests that we should calculate 'r' using the capital asset pricing model or CAPM. I am not explaining what CAPM is and how the equations related to CAPM are derived. It is available in most of the standard finance textbooks. In a nutshell, CAPM says:

$$r = r_f + \beta \times (r_m - r_f)$$

Where $r_f$ is the risk-free rate, β, is given by the formula:

$$\beta = \frac{Covariance\ of\ market\ return\ with\ stock\ return}{Variaince\ of\ market\ return}$$

($r_m$ - $r_f$) is the excess of market return over the risk-free rate, also called the risk premium.

CAPM suggests that each stock's riskiness is dependent on its volatility, and beta, which is a measure of the volatility of stock return becomes a proxy for the risk associated with the stock. Hence, investors should demand different returns from different stocks depending on their volatility.

The model has always remained controversial among practitioners. Some commonly aired arguments against CAPM are

- Risk is the probability of permanent capital loss and not book losses due to temporary fluctuations.
- The return that an investor gets has the same purchasing power irrespective of the stock from which it came. So, there is no point in employing different discount rates for

different stocks.

There are many assumptions behind the model that are also considered unrealistic. I am not getting into that either.

Let us keep things simple. Our purpose is to arrive at a realistic required rate of return that serves our purpose. It should neither be too high nor too low. Let us assume that the next best alternative to the stock is a risk-free bond. You may take twice the 10-year government bond yield as your required rate of return. When interest rates go down in general, the return expectations should also trend downwards and vice versa. By linking your return expectation to a number that is easily available in the public domain, you have given due weightage to the prevailing economic situation. I have seen some investors say that they use 15% as the required rate of return irrespective of the external circumstances. Such a hard-coded approach may not be appropriate, especially when the prevailing rates are low.

Benjamin Graham talks about the desirable dividend yield of stock as 2/3rd of AAA bond yield. So, Graham did not fixate on a number as his dividend yield expectation. It went up and down depending on the prevailing AAA bond yield. When you take the required rate of return as two times the risk-free rate, you are taking a leaf out of Graham's approach. The method is simple and self-adjusting. Investors can set this number where they want. Some may be satisfied with a 1.5x risk-free rate while others may ask for 2.5x. The higher your return expectation lower will be your investible universe. It is better to avoid unrealistically high return expectations.

As Herbert Simon said, *"Whereas economic man maximizes, selects the best alternative from among all those available to him, his cousin, administrative man, satisfices, looks for a course of action that is satisfactory or 'good enough."*

This approach of twice the 10-year G-Sec yield as the required rate of return is a '*good enough*' approach for setting the required rate of return.

If the risk-free rate is 6%, the investor's return expectation is 12% at 2x the risk-free rate. When you compare this to CAPM, this is equivalent to a risk premium of 6% and beta, for whatever its worth, is equal to 1.

Sometimes the government may want to stimulate growth and keep interest rates low, even when the inflation rate is high. Many economies are today seeing negative real interest rates. Under such circumstances, the 2x multiplier may be applied to the inflation rate

rather than to the risk-free interest rate.

The multiplier on the risk-free rate or inflation to arrive at the required rate of return is a simple and efficient method, which frees the investor from complex mathematics.

Another option available is to look at what the market has been delivering. It is a reasonable expectation that an investor, for all his effort, wants to earn something more than the index. So, the investor can examine the index returns. In the table below, I have given the returns delivered by the NIFTY50 index, which is a benchmark index for investors in the Indian equity market.

| Year | NIFTY 50 as of 31st March | 10 years CAGR | 15 years CAGR |
|---|---|---|---|
| 1996 | 985 | | |
| 1997 | 968 | | |
| 1998 | 1,117 | | |
| 1999 | 1,078 | | |
| 2000 | 1,528 | | |
| 2001 | 1,148 | | |
| 2002 | 1,130 | | |
| 2003 | 978 | | |
| 2004 | 1,772 | | |
| 2005 | 2,036 | | |
| 2006 | 3,403 | 13.2% | |
| 2007 | 3,822 | 14.7% | |
| 2008 | 4,735 | 15.5% | |
| 2009 | 3,021 | 10.9% | |
| 2010 | 5,249 | 13.1% | |
| 2011 | 5,834 | 17.7% | 12.6% |
| 2012 | 5,296 | 16.7% | 12.0% |
| 2013 | 5,683 | 19.2% | 11.5% |
| 2014 | 6,704 | 14.2% | 13.0% |
| 2015 | 8,491 | 15.4% | 12.1% |
| 2016 | 7,738 | 8.6% | 13.6% |
| 2017 | 9,174 | 9.2% | 15.0% |
| 2018 | 10,114 | 7.9% | 16.9% |
| 2019 | 11,624 | 14.4% | 13.4% |
| 2020 | 8,598 | 5.1% | 10.1% |
| 2021 | 14,691 | 9.7% | 10.2% |

The 15-year CAGR on a rolling basis range from 10% to 17% with a mean return of about 12.8%. But the interest rates and the returns have been trending down of late. The mean of 10- year CAGR of returns has been around 13%, and here too returns have trended down of late. So, 12% can be a reasonable assumption based on the

table.

The standard deviation of the 10-year CAGR is about 4.6% while that of the 15-year CAGR is about 1.9%. The cyclicality of the market gets evened out over a longer period. Setting return expectations based on a 15-year CAGR hence seems to make more sense.

In this book, we will use 12% as the return expectation for all the illustrations. However, you may adjust this number depending on the circumstances prevailing at the time you are investing.

So, what does the required rate of return tell you from an investment point of view? The process of investment involves forming expectations about the future performance of the business. These expectations feed into the valuation model from which you estimate the fair value of the stock. When a stock is available at fair value and the business performs in line with your expectations you expect to earn the required rate of return. The essence of value investing is estimating the fair value of the stock and buying at a discount to the fair value. When you buy the stock at a discount to fair value, you get what Benjamin Graham calls the margin of safety. The margin of safety helps you in two ways:

a)  If the company delivers in line with your expectations and you have bought the stock with a margin of safety, then a reversion to fair value helps you earn a return that is more than the required rate of return.

b)  You form expectations based on the information available to you, which is never complete. Business realities are dynamic. If the business performance falls short of expectations, then the margin of safety cushions the extent of correction that the stock suffers and reduces the losses.

As Warren Buffett said, *"When you build a bridge, you insist that it can carry 30,000 pounds, but you only drive 10,000-pound trucks across it. The same principle works in investing."* The difference between the fair value of a stock and the price you pay is the margin of safety that you get. The higher the margin of safety, the better.

To conclude, the choice of the required rate of return or 'r' is a key step in the valuation exercise. While academic finance offers a rigorous mathematical model like CAPM, alternate easy to implement methods can be used for setting 'r'. This includes setting 'r' as a multiple of prevailing risk-free rate or inflation or by basing it on long term returns delivered by the stock index. While you are free to set your return expectation, too high an expectation may mean that many good companies may go outside your investment universe due to seemingly high valuations. This will lead to a risk of you getting

forced to compromise on quality. Similarly, too low a return expectation would probably mean that you may overpay for the stock as the return expectations of other market participants are higher. It is entirely up to you to decide what required rate of return you are comfortable with. However, for illustrations in the coming chapters, we will need a number for 'r'. In this book, we will be using 12% as the required rate of return.

# Valuing a company in the mature growth phase

In the earlier chapter, we derived the PBV model, which says that the fair price to book value multiplier for a stock is given by:

$$PBV = \frac{(ROE - g)}{(r - g)}$$

In this chapter, I will put some real-world numbers into the model. Since the model is primarily used for mature growth companies, I am selecting a stable utility company for illustration. This company is a listed city gas distribution company and is almost a monopoly in its area of operations.

The snapshot of the financials of the company over the last few years is given in the following table:

|  | FY17 | FY18 | FY19 | FY20 | FY21 |
|---|---|---|---|---|---|
| Sales | 2,034 | 2,233 | 2,791 | 2,972 | 2,153 |
| Gas Volume (mmscmd) | 2.57 | 2.7 | 2.95 | 2.95 | 2.22 |
| Operating profit | 644 | 780 | 885 | 1,053 | 934 |
| PAT | 393 | 478 | 546 | 794 | 620 |
| Net worth | 1,840 | 2,095 | 2,399 | 2,953 | 3,232 |
| ROE % | 22.80% | 26.00% | 26.10% | 33.10% | 21.00% |
| Operating profit CAGR |  |  |  |  | 9.73% |
| PAT CAGR |  |  |  |  | 12.02% |
| Mean ROE |  |  |  |  | 25.71% |

a) *All amounts in INR Cr*
b) *There could be some round off adjustments in the calculation*

There was a dip in FY21 due to COVID-19 pandemic related disruptions. But the latest two quarters seem to indicate that the company is coming back on track.

|  | Q1FY22 | Q2FY22 |
|---|---|---|
| Sales | 667 | 908 |
| Gas Volume (mmscmd) | 2.40 | 3.12 |
| Operating profit | 323 | 324 |
| Other Income | 19 | 23 |
| Operating profit | 304 | 301 |
| PAT | 204 | 204 |

If we examine the gas volumes over the years, we can assume that the FY21 volume should have been around 3 mmscmd under normal circumstances. The company seems to be growing its volume at about 4%. The company seems to be reaping the benefits of operating leverage resulting in the operating profit and PAT growing faster than volume growth.

Let us assume that you are comfortable with the assumption of PAT in H2FY22 at similar levels as H1FY22, which means that the company would generate a PAT of ~808 Cr in FY22. On the beginning net worth of 3,232 Cr, this works out to an ROE of about 25%. This is in line with what the company has been reporting in the past. If your business analysis indicates that the business will continue to perform similarly, then you may assume the 25% ROE as a sustainable ROE for analysis. You may compare your initial estimate of future profit against the estimate of analysts who cover the stock. You may also go through the recent conference call transcripts of the company. This can give indications about the profits and the risks faced by the company.

The operating profit CAGR has been ~9.7% over the past despite the negative impact in FY21, and PAT CAGR has been higher. With a 4% volume growth, assuming a PAT growth of 8% going forward may not be unreasonable.

If you assume that the ROE of 25% is sustainable and the sustainable earnings growth g is 8%, and your required rate of return r is 12%, then the estimated PBV of the company will be (0.25-0.08)/ (0.12-0.08) = 4.25x. On a book value of 3,232 Cr in FY21 the fair market value of the company is calculated as 4.25x3,232 = 13,736 Cr.

Having arrived at the estimate for fair market value, the next step is to see the price at which the market is offering us the stock. At the time of writing this chapter, the company's market capitalization was about 9,512 Cr. This means that the company is available at a discount of about 30% to your estimate of fair market value. It needs no

explanation that if you assume the growth rate of 9.7% to be sustainable, the fair market value estimate will be much higher. But it is always better to be conservative and not assume a higher value for g as the model is hypersensitive to this assumption of g. In case you feel that higher growth is possible, you should use a multistage model. We will discuss in detail, using another case study, how we adjust the model for higher growth.

Coming back to this stock, it looks like the market is offering us the stock at a discount to our estimate of fair market value. So, should you be rushing in to load up the truck? The answer is no. When the market offers something that looks cheap, it is always good to invert the situation. What is the market telling us about future growth?

For this, we estimate what the current price to book value is. In this case it is $9,512/3,232 = 2.94x$. Remember, we got the fair market value estimate as 4.25x. But this was assuming a growth of 8%. Let us now calculate the growth implied by the current price. For this, we substitute this value in the PBV equation to calculate g.

$$2.94 = (0.25\text{-g})/(0.12\text{-g})$$

Solving this equation, we get the sustainable growth equal to 5.3%. You can solve it analytically or use a goal seek function in MS-Excel or its equivalent in any other spreadsheet software. The implied growth is about 45% lower than what the company has delivered historically.

It can also be the case that the market is comfortable with the assumption of sustainable earnings growth of 8% but is skeptical about the ROE assumption. Let us now invert the situation and see what is the ROE that the current price implies.

$$2.94 = (\text{ROE-}0.08)/(0.12\text{-}0.08)$$

Solving this equation, we get the ROE as 19.76%. We can conclude that the market expects the ROE to trend down to about 20% or sustainable growth to taper down to about 5.3%. The price can also imply some combination of growth and ROE in between – i.e., between 25% ROE with 5.3% growth and 20% ROE with 8% growth.

Now that valuation has posed challenges to your assumptions, it is time to go back to the business basics and convert mathematics into English. Relook at the risks involved in your assumptions. I list a few here:

a) Significant push for electric vehicles leading to slower growth in the gas business
b) Limited area of operation and little scope for future growth
c) Regulated business – high ROE of 25% may come under regulation and pricing power impacted

d) Price risk in procurement of gas which they are not able to pass on

e) Monopoly challenged by new entrants

f) Poor results expected in the near term and market is waiting for the phase to get over

You can unearth many more risks by revisiting your business analysis.

Value investors are quite familiar with Mr. Market, an allegory created by Benjamin Graham. In the investment classic, *The Intelligent Investor.* Graham writes,

*"One of your partners, named Mr. Market, is very obliging indeed. Every day he tells you what he thinks your interest is worth and furthermore offers either to buy you out or sell you an additional interest on that basis. Sometimes his idea of value appears plausible and justified by business developments and prospects as you know them. Often, on the other hand, Mr. Market lets his enthusiasm or fears run away with him, and the value he proposes seems to you a little short of silly."*

Graham wrote this many decades back. Information asymmetry has reduced considerably since then. The liquidity has also increased. So, the price offered by Mr. Market nowadays is often a closer reflection of the underlying value of the business than it was during Graham's time. However, many value investors often exhibit overconfidence in their abilities. Whenever the market price is lesser than what they have estimated as the fair value, they feel that the manic Mr. Market is offering a bargain. My take is simple. Mr. Market continues to be your business partner. However, he mostly guides you in the right direction. When your estimate of value is vastly different from what Mr. Market is offering, spend time revisiting the investment thesis. Employ every possible technique to kill the investment idea. If you cannot kill it compare it to other companies that have already made their way into the portfolio and see why the new company deserves a place in the portfolio from a risk-reward point of view. **Every stock must earn its position in your portfolio**.

This book is not about how to perform fundamental analysis. However, the outcome of the valuation exercise will help you revisit your investment thesis to see whether you have missed something in the initial analysis. This will help you to either go ahead with much more confidence or revise your assumptions for ROE and growth. If you are indeed changing your assumptions, then based on the revised assumptions you can re-evaluate whether the stock at the current price still makes sense as an investment candidate. The output of the valuation exercise will help you to think more objectively. The output is only as good as the assumptions going into it. Only when you are convinced that the market is overreacting and underestimating the

business value do you need to go ahead and buy.

The attractiveness of every investment opportunity needs to be compared with the other positions in the portfolio and other opportunities at hand. Having a quantitative estimate of a company's fair value, which the valuation exercise provides, helps you make this assessment more easily. Note that what you are looking for here is relative attractiveness. While one can argue about the conservativeness or otherwise of your assumptions, so long as you are consistent, you can make the comparison on a reasonably consistent basis.

The analysis can help you conclude whether to buy the stock or not. The next question that needs an answer is how much to buy, which we will discuss at length in another chapter on position sizing. Be careful when you are getting a lot of ideas from the same sector. Often this is the case. The flavor of the season in the market keeps shifting. You will often see many stocks from a sector that is facing headwinds underperforming and entering the value zone. You must not get too carried away with individual stock analysis and end up with too many companies with the same underlying business drivers.

For example, there may be a time when many steel companies are there in the value zone and other times when many automobile companies are there in the value zone. It is always good to map the sector to which each stock belongs and see the portfolio weights from a sectoral perspective. This will protect you from adding more stocks from the same sector into the portfolio. Diversification of holdings is critical, and stocks in the portfolio should have different underlying business drivers from a risk management point of view.

Let us now come back to the example we discussed earlier - the city gas distribution company. Let us for a moment, assume that you are confident that the earnings will continue to grow at 8%, and the company will continue to maintain the ROE of 25%. We estimated the fair PBV of the stock as 4.25x and the fair market value as 13,736 Cr. We also said that the market capitalization of the stock is 9,512 Cr. This implies that the stock is available at about a 30% discount to your fair value estimate. In other words, if the company keeps performing as per your expectations, then the market can restore the stock price to your assessment of fair value. If this happens, you make a return of about 44%, which is quite attractive. Now that you have quantified your return expectation, you now have an anchor against which you can compare this opportunity with other potential candidates and the stocks in your portfolio.

To conclude, we discussed how to go about valuing a stable company in the mature growth phase. The summary of the steps involved is

depicted in the following flowchart:

Firm up your assumptions about the company's ROE and growth based on your analysis of the business

Apply the PBV model to estimate the fair PBV multiple and your initial estimate of fair market value of the business

Compare your initial estimate with the current market capitalization of the company and see whether the company is available at a reasonable discount to your fair value estimate

If the stock is avialable at a discount to your fair value estimate revisit your assumptions and compare it with market implied expectations

Re-estimate your fair value for the stock based on revised assumptions (if any)

Calculate the potential upside & relative attractiveness vis-a-vis alternate opportunities and the stocks which are already there in the portfolio

Decide to invest/skip

# Roll forward of fair market value

In the previous chapter, we estimated the fair market value or FMV of a mature growth company using the PBV model. I reiterate that the fair market value is not a static estimate. Under normal circumstances, the company generates a profit, a part of it gets distributed, and the remaining capital gets redeployed in business. In the process, the company's net worth or book value increases with time. The model expects the company to deliver the same ROE on the increased net worth. It is difficult for a company to generate the same ROE every year. However, the ROE usually oscillates around a particular level over time. The model helps us to estimate a fair PBV multiple that we can apply to the business. As the company's book value increases and there is no reason to modify the ROE or growth assumption, the company's fair market value, which is equal to the book value multiplied by the calculated PBV multiple, keeps increasing with time.

So, if the company keeps performing as per your assumption, the fair market value also steadily increases with time. If the company performs worse than your assumptions forcing you to use a lower stable state ROE assumption or lower growth, the fair market value needs to be revised downwards. Hence, you should guard against getting anchored to your initial estimate of fair market value. Estimating the fair market value is an ongoing process, and you need to update it regularly. Updating the fair value estimate is even more imperative if you are contemplating a reduction or exit of an existing position.

Let us now go back to the mature growth company we explored in the earlier section. Let us assume that after analysis, you are satisfied with using a 25% ROE and 8% growth assumption. The fair PBV works out to:

$(0.25-0.08)/(0.12-0.04) = 4.25x$.

The net worth at the start of FY22 was 3,232 Cr, and hence we estimate the fair value at $4.25 \times 3,232 = 13,736$ Cr.

For a 25% ROE and 8% growth, you can calculate the theoretical dividend payout from the equation we discussed in an earlier chapter:

$$ROE \times b = (ROE - g)$$

$$\therefore b = \frac{(ROE - g)}{ROE}$$

In this case, the payout b will be (0.25-0.08)/0.25 = 68%. So, the company needs to distribute about 68% of its earnings as dividends.

We said that your return will be equal to the required rate of return if you buy the business at its fair market value and the business delivers as per expectations. Let us now calculate how you achieve this required rate of return of 12%. The company has a net worth of 3,232 Cr to start with. Our stable ROE assumption is 25%. So, the company should report a profit after tax of 25%*3232 = 808 Cr. The dividend payout ratio required is 68%. So, the company distributes 0.68*808 = 549.44 Cr as the dividend. This leaves the company with 808 - 549.44 = 258.56 Cr as retained earnings. The ending net worth would hence be 3232 + 258.56 = 3490.56 Cr. The beginning fair market value is 4.25*3232 = 13,736 Cr. The ending fair market value is 4.25*3490.56 = 14,834.88 Cr. The increase in fair market value is 8%. You also get the dividend of 549.44 Cr which translates into a dividend yield of 4%. Thus, you get the required rate of return of 12%, which has two components. There is an 8% capital appreciation due to increase in fair market value, and 4% is the dividend yield.

If we extrapolate the argument, the investor expectation translates into the following table:

|  | Year 0 | Year 1 | Year 2 | Year 3 | Year 4 |
|---|---|---|---|---|---|
| Net worth at the start | 3,232.00 | 3,490.56 | 3,769.80 | 4,071.39 | 4,397.10 |
| ROE | 25.00% | 25.00% | 25.00% | 25.00% | 25.00% |
| PAT | 808 | 872.64 | 942.45 | 1,017.85 | 1,099.28 |
| PAT Growth % |  | 8.00% | 8.00% | 8.00% | 8.00% |
| Dividend | 549.44 | 593.4 | 640.87 | 692.14 | 747.51 |
| Retained Earnings | 258.56 | 279.24 | 301.58 | 325.71 | 351.77 |
| Net worth at the end | 3,490.56 | 3,769.80 | 4,071.39 | 4,397.10 | 4,748.87 |
| Fair PBV | 4.25 | 4.25 | 4.25 | 4.25 | 4.25 |
| FMV | 14,834.88 | 16,021.67 | 17,303.40 | 18,687.68 | 20,182.69 |
| FMV growth % |  | 8.00% | 8.00% | 8.00% | 8.00% |
| Dividend Yield % |  | 4.00% | 4.00% | 4.00% | 4.00% |
| Total return |  | 12.00% | 12.00% | 12.00% | 12.00% |

This explains why buying at a discount to fair value is a critical component of the total returns generated. The bridging of the gap

between the purchase price and the fair market value gives you the excess return over the required rate of return. The difference also acts as a margin of safety if the company's performance is worse than expectations. The example shows why the fair market value is not a static estimate but keeps changing based on how the business is progressing.

The table, however, provides only a theoretical unfolding of your assumptions that leads you to the fair market value estimate.

The other key driver of business value is the company's capital allocation policy. Many managements deliver exceptional operational results but are unable to translate that into a corresponding increase in market capitalization due to poor capital allocation decisions. Let us see how the capital allocation decisions impact the value of the business.

We continue with the same example. Let us assume that the company has delivered the expected profit after tax of 808 Cr. But the company has distributed only 40% of PAT as dividends. This means, the company has distributed 0.4*808 = 323.2 Cr as dividends. The retained earnings will be 808-323.2 = 484.8 Cr, which is added to the FY21 net worth of 3,232 Cr to reach 3,716.8 Cr. Again, you need to re-base your long-term fair value estimate. There is a redeployment of more capital than expected into the business. If you expect the company to deliver 25% on this higher-than-expected net worth, then the new fair market value will be 4.25x3716.8 = 15,796.4. The initial expectation of fair market value was 14,834.88. The difference in fair market value is 961.52. The difference between expected dividends and paid dividends is 549.44-323.2 = 226.24, which is the additional capital deployed in the business. A PBV multiple of 4.25x on this additional capital deployed leads to the same 961.52 which reconciles the situation.

In effect, the fair market value has increased by 15,796.4/13,736 -1 = 15%. This also tallies with our earlier equation if we use b as 40% and find g using the equation:

$$ROE \times b = ROE - g$$

$$g = ROE(1 - b)$$

0.25 x 0.4 = 0.25-g and solve for g, we get 15%.

However, if your PAT growth expectation remains the same at 8%, it would mean that the company has retained more earnings than needed. This will reflect as a decrease in ROE expectation that you need to use in the valuation framework. This means that the next

year's PAT will be 808*1.08 = 872.64 Cr. However due to higher earnings retention, the beginning net worth is 3,716.8 Cr, and the ROE is only 23.4%. If the company continues to grow at a rate much lower than what is warranted by the extent of earnings retained, then the ROE starts decreasing with each passing year and slowly stabilizes at a lower level.

Because of this poor capital allocation, let us re-estimate the sustainable ROE to be 20%. At 8% growth, the fair PBV would dip to 3x, effectively leading to the derating of the stock. This example tells you how even good businesses can suffer de-rating if the capital allocation is not proper. There are many good businesses with poor capital allocation policies making them cash hoarders. Such companies suffer severe derating as the cash retained does not fetch anywhere close to the required rate of return. I will be discussing cash hoarding companies with a case study and a method to approach such companies in the coming chapters.

Fair market value estimation is an ongoing process. Guard against a tendency to exit at a price target based on the estimate at the point of purchase. You may do all the analysis at the time of purchase with a fixed target price in mind. When the target is reached, you may have a temptation to sell. Often, the company's fair market value would have also advanced in the interim, and if you sell, you may be exiting too early. Hence, the fair market value estimation needs to be updated at the point of sale also. Since fair market value keeps increasing (provided fundamentals remain the same) over time, you should reconsider selling even at times when some minor overshoot of fair market value happens as alternative avenues to deploy the proceeds may often not be available. Even when a stock is trading close to its fair market value and the company is meeting your assumptions, remember that you continue to earn the required rate of return.

The best-case scenario is probably investing in a company with a healthy ROE redeploying capital into the business, and the incremental capital deployed also earns the same healthy ROE. The next best alternative is investing in companies that generate a healthy ROE but have a low capital intensity and distribute most of their earnings. In this case, the business throws out cash, but you must look for reinvestment opportunities. Then there are companies where underlying economics is good, but poor capital allocation leads to muted returns. Poor capital allocation can be either cash accumulating in the balance sheet or diversification into new lines where the ROE is not as healthy. The stock price performance of such companies usually will be sub-optimal, but such companies can salvage the situation when capital allocation is corrected, which leads to rerating. For

example, a company with 20% ROE and 8% growth gets a 3x PBV, while the PBV for a 24% ROE with 8% growth will be 4.25x. The impact of every incremental percentage on the ROE is quite substantial. An improvement in capital allocation can improve the ROE by a few percentage points for most companies. Finally, we have companies where the ROE itself is poor, often lesser than the required rate of return. In such cases, the possibility of generating a good return is low as odds are stacked against you.

The significance of capital allocation often does not get the same focus as operational excellence both from the managers and the investors. Hence, I will be delving into more detail on this critical factor. The impact of capital allocation and how poor capital destroys shareholder value, will be covered in the next chapter. We will also attempt to quantify the wealth destruction caused by poor capital allocation.

# Importance of capital allocation in valuation

In the previous chapter, we spoke about how a company which retains more cash than what is warranted by the growth would witness a dip in ROE and suffer a derating leading to the reduction of fair market value. Capital allocation is as much a value driver as business fundamentals. While many books are available that focus on the operational excellence achieved by businesses, few are available that focus on capital allocation. William N Thorndike's book, "*The Outsiders: Eight Unconventional CEOs and Their Radically Rational Blueprint for Success*" is probably one of the best books that explains the importance of capital allocation.

Thorndike writes, "*Basically, CEOs have five essential choices for deploying capital—investing in existing operations, acquiring other businesses, issuing dividends, paying down debt, or repurchasing stock—and three alternatives for raising it—tapping internal cash flow, issuing debt, or raising equity. Think of these options collectively as a tool kit. Over the long term, returns for shareholders will be determined largely by the decisions a CEO makes in choosing which tools to use (and which to avoid) among these various options. In simple terms, two companies with identical operating results and different approaches to allocating capital will derive two very different long-term outcomes for shareholders.*"

An exceptional capital allocator can deliver good returns to shareholders even if he oversees a mediocre business. In this chapter, we will use quantitative techniques to drive home this point about the significance of capital allocation and why it matters.

Let us go back to the earlier example of the city gas company what happens when the company distributes only 40% as dividends instead of 68%, which is warranted if earnings growth will be only 8%. I am presenting a table that shows the snapshot of the same company. The 'good' column is when the dividend payout is in line with the growth capital requirement, and the 'bad' column is when the retained earnings are higher than the growth capital requirement.

|  | Good | Bad |
|---|---|---|
| Net worth at start | 3,232.00 | 3,232.00 |
| PAT | 808 | 808 |
| PAT Growth % | 8% | 8% |
| Dividend | 549.44 | 323.2 |
| Retained Earnings | 258.56 | 484.8 |
| Net worth - end | 3,490.56 | 3,716.80 |
| ROE | 25.00% | 23.48% |
| PBV | 4.25 | 3.87 |
| Fair Market Value | 14,834.88 | 14,382.40 |

The 'bad' company paid out only 40% of PAT as dividends, and hence the ROE dipped to 23.48% (808*1.08/3716.8) while the 'good' company continued to have an ROE of 25% (808*1.08/3490.56). We can also see that 23.48% = 25%*3490.56/3716.8, i.e., the 'bad' ROE is equal to the 'good' ROE scaled down by the net worth. I have ignored the other income that the incremental cash hoard may fetch for this analysis.

The extra earnings retained is 484.8-258.56 = 226.24. If you apply the same PBV model, but with the ROE of 23.48%, the PBV multiplier comes down to 3.87 instead of 4.25, leading to a fair market value of 14,382.4. Compared to the 'good' company, the fair market value is down by 452.48 Cr (14834.88-14382.4). So, what does this mean? The extra earnings retained of 226.24 led to a reduction of fair market value by 452.48. Also note that 452.48 = 226.24*2. So, every rupee of unnecessary retained earnings leads to value destruction of twice the amount retained. We can arrive at the value destruction quantitatively as follows:

Let NW represent net worth, and FMV represent the fair market value. I use an apostrophe symbol as the differentiator for the 'bad' company. The PBV model says that the fair PBV is given by:

$$PBV = \frac{(ROE - g)}{(r - g)}$$

Expressing in terms of the net worth of the company, the fair market value of the company is given by:

$$FMV = \frac{(ROE - g)}{(r - g)} \times NW$$

$$FMV_{good} - FMV_{bad} = \Delta FMV$$

$$\Delta FMV = \left(\frac{ROE - g}{r - g}\right) \times NW - \left(\frac{ROE' - g}{r - g}\right) \times NW'$$

$$Since\ ROE' = ROE \times \frac{NW}{NW'}$$

$$\Delta FMV = \left(\frac{ROE - g}{r - g}\right) \times NW - \left(\frac{ROE \times \frac{NW}{NW'} - g}{r - g}\right) \times NW'$$

$$\therefore \Delta FMV = \frac{g \times (NW' - NW)}{(r - g)}$$

Since the unnecessary retention is equal to

$(NW' - NW)$ the $\Delta FMV$ per unit of unncessary retention is $\dfrac{g}{(r - g)}$

In this example, we calculated that the fair market value reduction was two times the unnecessary amount retained. Substituting the above relationship with g=8% and r=12%, we get g/(r-g) as 2x. This calculation is consistent with our findings. When growth is higher, the fair market value is also higher. But in such companies, the fair market value destruction due to unnecessary capital retention is also higher. Unnecessary capital retention leads to large cuts in the PBV multiple due to its adverse impact on ROE. The poor capital allocation can be an expensive acquisition, diversification into a new line with poor return ratios, or even simple cash-hoarding. **Retention of unnecessary cash is equivalent to a capital allocation in a business that earns only a fraction of the required rate of return.**

What if the company allocates capital poorly for not one year but consistently? In the example, we found the optimal payout ratio as 68%. What if the company has a stated policy of distributing only 40% irrespective of the availability of capital deployment opportunities of retained earnings? Let us go back to the equation:

$$ROE \times b = (ROE - g)$$

For this situation, let us assume that g=8% and the payout ratio b is fixed at 40%. For a 25% ROE company, we needed a 68% payout. Here, ROE is the unknown variable that we need to calculate.

ROE*0.4 = ROE-0.08

ROE*0.6 = 0.08

ROE = 13.3%

This calculation implies that the ROE will dip continuously from the present level and eventually settle at 13.3%.

We can try this for various other permutations. For example, if the payout is only 10%, long-term ROE will settle at 8.9%.

There are several good businesses in the market. But many of them suffer from poor valuations due to improper capital allocation and shareholder unfriendly behaviour. "*The Outsiders*" gives insights into the way of working of some exceptional capital allocators.

We will now plunge into a case study of a good business where shareholders may suffer due to poor capital allocation. How do you approach such companies? I am providing a framework here that can help in assessing such companies.

The typical characteristics of a cash hoarding company that we will be discussing in the context of capital misallocation are the following:

- Good operating business that generates good free cash flows
- Capex requirements are significantly lower than the cash flows generated
- Management is stingy with cash distribution through buyback/dividends
- Cash accumulates over time, leading to ROE trending down

Let us take one such company. This company is almost a monopoly in a small sub-segment of an industry in a small geographic area.

| | FY17 | FY18 | FY19 | FY20 | FY21 |
|---|---|---|---|---|---|
| Sales | 375.21 | 425.88 | 464.01 | 468.63 | 340.12 |
| Op. Profit | 68.91 | 107.59 | 116.86 | 88.69 | 75.31 |
| OPM % | 18.40% | 25.30% | 25.20% | 18.90% | 22.10% |
| Other Income | 3.97 | 9.72 | 13.74 | 9.43 | 30.29 |
| PBT | 67 | 111.29 | 123.2 | 90.78 | 100.06 |
| PAT | 43.64 | 72.9 | 82.3 | 67.85 | 80.09 |
| Dividend | 4.39 | 4.39 | 5.48 | 5.49 | 7.32 |
| Payout ratio | 10.10% | 6.00% | 6.70% | 8.10% | 9.10% |
| Net worth | 224.62 | 291.28 | 366.82 | 430.39 | 505 |
| ROE % | 24.10% | 32.50% | 28.30% | 18.50% | 18.60% |
| Cash & Eq. | 52.64 | 118.17 | 163.9 | 247.54 | 293.37 |

Like a typical cash hoarding company, we find that the cash is accumulating rapidly, and ROE is dipping downwards. The topline growth is limited, indicating that the market is mature. The accumulation of cash implies that the capex requirements are limited, and distribution to shareholders is also low.

One way of approaching such companies is to arrive at the fair market value of the core operations and then ascribe a value to the surplus cash to arrive at the total value.

Let us first reconstruct the company financials by considering only the operating assets.

|  | FY18 | FY19 | FY20 | FY21 |
|---|---|---|---|---|
| Operating PBT | 101.57 | 109.46 | 81.35 | 69.77 |
| Operating PAT | 76.18 | 82.1 | 61.01 | 52.33 |
| Operating Net Worth | 173.11 | 202.92 | 182.85 | 211.63 |
| Operating ROE % | 44.30% | 47.40% | 30.10% | 28.60% |

I have removed the other income in the income statement to arrive at Operating PBT. I have also removed the cash and cash equivalents to arrive at the operating net worth. I have assumed a tax rate of 25% on the operating PBT to arrive at the operating PAT. We calculate the operating ROE by dividing the operating PAT by the operating net worth.

Let us assume that the company will deliver about 65 Cr of operating PAT in FY22. Operating ROE will be 65/211.63 = 31%.

Let us assume that 70% of operating PAT will be cash added to the balance sheet. The incremental cash goes to bloat the balance sheet and the remaining gets used in operations. So, the ending operating net worth will be 211.63+0.3*65 = 231 Cr.

Let us assume a long-term operating ROE of 30% and sustainable growth of 6%. This would imply a PBV multiple of (0.30-0.06)/ (0.12-0.06) = 4x. Applying this PBV on the operating net worth of 231 Cr gives us the value of operations as 925 Cr.

Let us say that the company ends up with cash of 340 Cr at the end of FY22. The accumulated cash balance is almost 37% of the estimated fair market value of operations. How much value should you give to this cash? It depends on your assessment of the management. If you believe that the company will soon distribute all the cash balance, then the cash balance is valued at 100%. If you expect it to remain in the company and never return to shareholders, the value is as good as

zero. So, after all this mathematics, we conclude that the cash is worth something between zero and 100%.

A harsher approach is to arrive at a sustainable ROE, assuming a stable but low payout. Say you estimate that the payout would be only 20%, and the enterprise-level ROE will settle at $g/(1-b)$ or $0.06/0.8 = 7.5\%$. This ROE implies that the company is maybe worth less than book value. Such cases are also available in the market where the management consistently demonstrates that they do not care about the minority shareholders. For example, the company management may extend a loan to a related party under the control of the promoters. Such stocks often languish, sometimes even below the book value, even if core operations are doing well. In most cases, estimating the value of the core business and adding the value of cash at a discount based on your assessment gives a reasonable estimate of fair value.

The investor must keep picking signals from the management as to what they intend to do with the cash and update the assumptions. If you have ascribed a 50% discount to the cash initially, and the company decides to suddenly buy a large corporate office in a prime locality the value can come down from 50% to zero, as the new office may not add much value to the shareholders. If the company finally decides to do large scale buybacks or dividends, the value ascribed to the cash balance may go up from 50% to 100%. If the company decides to acquire another company or enter a new line of business, you need to recalibrate the discount based on your views on the decision. So, the discount on the cash balance remains dynamic.

Continuing with our example, assume that you value the cash at a 50% discount. The fair market value of the company will now be $925 + 340*0.5 = 1095$ Cr.

As discussed earlier, the fair market value is hypersensitive to growth. If you feel that the operating PAT can compound at 8% instead of 6% then the PBV will be $(0.3-0.08)/(0.12-0.08) = 5.5x$ and the fair market value will be $5.5*231 + 340*0.5 = 1440$ Cr. Hence, the growth estimate is critical in assessing the attractiveness or otherwise of a stock.

As I prepare this chapter, the company's market capitalization is 1,215 Cr. So, the market is probably pricing a growth somewhere between 6% and 8%.

You may adopt a similar approach in the case of businesses that deploy capital into poor ROE ventures. The capital deployed in the poor ROE ventures is ascribed an appropriate discount.

Sometimes the market loses all the hope of the management making a

capital allocation decision that makes sense. In such cases, the markets punish the stock and send a message to future investors. The financials of one such company from the media space is given here:

| | FY15 | FY16 | FY17 | FY18 | FY19 | FY20 | FY21 |
|---|---|---|---|---|---|---|---|
| Sales | 345 | 374 | 354 | 375 | 417 | 341 | 272 |
| Op. Profit | 97 | 128 | 106 | 118 | 87 | 70 | 75 |
| Margin % | 28% | 34% | 30% | 31% | 21% | 21% | 28% |
| PBT | 86 | 123 | 111 | 123 | 97 | 74 | 116 |
| PAT | 57 | 80 | 71 | 80 | 63 | 58 | 89 |
| Net worth | 453 | 570 | 589 | 665 | 723 | 777 | 884 |
| Investments | 171 | 393 | 287 | 392 | 504 | 428 | 512 |
| Dividend Payout % | 5 | 5 | 5 | 5 | 6 | 6 | 4 |

The company in the print media space publishes a vernacular daily newspaper that is the market leader in one state. The company generates healthy free cash flow from operations. However, it has few reinvestment opportunities. A few other companies in the same space have overcome the lack of reinvestment opportunities by distributing most cash flows as dividends/buybacks. However, this company seems to be happy with retaining the cash in the company. The paltry dividend payout ratio also confirms this.

The company has deployed about 50% of the surplus cash into real estate ventures. It is no surprise that the market lost confidence in this management. In FY21, the company had a market capitalization of just 488 Cr. What the market is telling you is that the stock is not even worth its investment book, forget the operations. Even today, you will be surprised to see that companies are available at less than the cash and cash equivalents in the balance sheet.

When I began my investing journey, I used to get very excited about what Graham called net-nets. These were stocks selling at less than the working capital net of all liabilities. However, after experimenting with many such net-nets I concluded that they seldom work, at least in India. One reason is the high promoter stake in such companies, which ring-fences it from acquirers and activist investors who can unlock value. The companies continue to do well operationally, generate good cash flows, and keep bloating their investment book. Nothing finally flows to shareholders. Rarely you do come across situations where there is a catalyst or trigger for value unlocking. Otherwise, most such cases end as a waste of time, energy, and capital.

In the aftermath of the great depression, Benjamin Graham wrote a three-part series in Forbes which was titled *Is American Business Worth More Dead than Alive?* He talked about companies that

were selling below the net liquidation values. In the aftermath of the great depression such a situation happening was not completely implausible. But even in a normal market when companies sell below the liquid investments in the balance sheet it tells the extent of pessimism that is there in the minds of the shareholders. There is nothing wrong with the company or its operations. What has happened here is that the management has lost the trust of the shareholders. In today's market, such stocks often are giving a warning to you to be doubly careful about what you are getting into. Entering such situations based on low price to assets value where there is no catalyst in sight for unlocking the value can be very risky.

The Indian equity market has many companies that have an excellent core business but are poor capital allocators. But as markets are becoming more mature some such old companies have started changing. When the new generation of management takes over, many of whom are well educated in business they bring in fresh ideas and a realisation that money needs to be made with shareholders and not off shareholders.

A leading auto company that was notorious for hoarding cash recently announced that they need a particular amount of cash as dry powder if acquisition opportunities arise. But 90% of whatever accrues beyond that stated amount will be distributed. A leading conglomerate that was notorious for allocating capital generated by a high ROE tobacco business into all and sundry businesses with low ROE has announced that going forward they will distribute 80-85% of PAT as dividends. You need to look out for such signals as it will mean that you can revise your ROE expectations of the company and you will often get surprised at the increase in the fair market value estimate that such steps can lead to.

# Be mindful of Mean Reversion

John Bogle said, "**Reversion to the mean is the iron rule of the financial markets.**"

The operating margins and ROE of most companies in an industry usually display mean reversion characteristics. The companies that do not mean-revert and show secular growth are rare and exceptional. Operating margins oscillate around the long-term mean depending on the demand-supply situation. Similarly, high ROE attracts fresh players into an industry, and low ROE triggers industry consolidation. You must guard against getting carried away by the near-term financials – both on the upside assessment when margin/ROE trends up and on the downside assessment when margin/ROE trends down. The PBV model is sensitive to the assumptions of long-term ROE, and a wrong assumption can lead to mistakes in estimation. In short, you need to be careful not to put an arrow at the end of a straight line.

Interestingly the tendency to revert to the mean is exhibited not only by most companies but also by the index. I analyzed the trend in ROE of the NIFTY 50 index starting from Jan 2000 to December 2021.
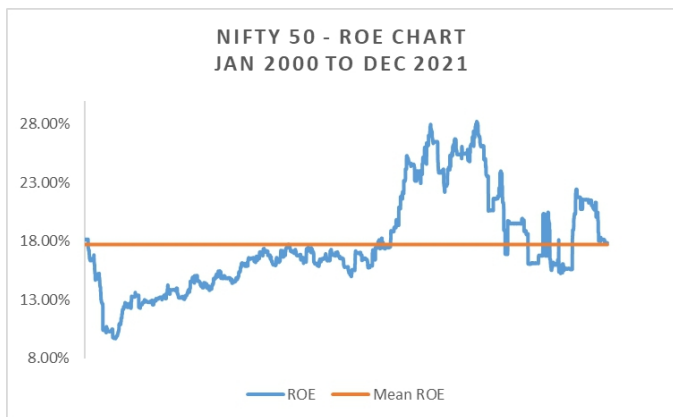


The summary statistics are presented in the following table:

| Statistic | Value |
|---|---|
| Mean | 17.70% |
| Standard deviation | 4.20% |
| Minimum | 9.70% |
| Maximum | 28.20% |
| Quartile (25%) | 15.00% |
| Quartile (75%) | 20.10% |

If you express the ROE in terms of duration, the index spent between ±1 standard deviation roughly 68% of the time. The ROE ranged between 13.5% and 21.8%.

| ROE Range | % Time spent in the range |
|---|---|
| < 13.5% | 14.50% |
| 13.5% to 17.7% | 50.70% |
| 17.7% to 21.8% | 17.50% |
| >21.8% | 17.40% |

Operating margins and ROE are generally closely related. The ROE trends up when the operating margin improves, while it trends down when the margins are on a downward trajectory. A big mistake in valuation is when near term results are extrapolated blindly as sustainable. Let me illustrate this with a company that has exhibited mean reversion tendencies over a reasonably extended period.

The business is cyclical, but the company has been profitable and is growing. It is not as cyclical as a commodity like steel or aluminium, and it is clear from the financials that the company does some reasonably fair value addition.

| | FY11 | FY12 | FY13 | FY14 | FY15 | FY16 | FY17 | FY18 | FY19 | FY20 | FY21 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Sales | 168 | 218 | 273 | 416 | 508 | 483 | 493 | 747 | 765 | 798 | 851 |
| Op. profit | 13 | 17 | 24 | 32 | 37 | 59 | 65 | 70 | 63 | 79 | 118 |
| OPM % | 7.70% | 8.00% | 8.70% | 7.70% | 7.20% | 12.10% | 13.10% | 9.40% | 8.20% | 9.90% | 13.80% |
| PBT | 9 | 11 | 18 | 27 | 30 | 57 | 58 | 60 | 53 | 70 | 110 |
| PAT | 6 | 8 | 12 | 18 | 20 | 37 | 38 | 41 | 34 | 52 | 82 |
| Net worth | 35 | 40 | 52 | 67 | 80 | 110 | 148 | 194 | 226 | 273 | 350 |
| ROE | | 22% | 30% | 35% | 29% | 47% | 35% | 28% | 17% | 23% | 30% |

The operating margins hover between 7% and 15%. Needless to say, the margins have a profound influence on the final numbers. When analyzing such companies, ensure that you observe the long-term trend. One option is to analyze the 5-year and 10-year history

|  | 5 years | 10 Years |
|---|---|---|
| Sales CAGR | 14.60% | 17.60% |
| PAT CAGR | 20.80% | 29.80% |
| Mean OPM | 10.90% | 9.80% |
| Mean ROE | 26.50% | 29.40% |

For ROE, as discussed earlier, I have used the geometric mean. The table clearly shows that the company has been consistently increasing its scale of operations. It has remained profitable, and profits have increased at a healthy rate. The ROEs have trended downwards mainly because of using a high amount of debt compared to shareholder's equity in the initial years. Based on all this, when one looks at the numbers, the performance in FY21 seems abnormally high. The OPM has been closer to the higher end of the historical range, and ROE is also high compared to the 5-year mean. If you plug in a 30% ROE and 8% growth into the PBV model, it gives a PBV multiplier of 5.5x.

This is where caution is needed. Let us assume that the company would revert to its historical operating margin of 10%. Assuming a 15% top-line growth, we can try a simple 5-year projection and see how the situation unfurls.

|  | FY21 | FY22 | FY23 | FY24 | FY25 |
|---|---|---|---|---|---|
| Sales | 851.49 | 979.21 | 1,126.10 | 1,295.01 | 1,489.26 |
| Op. profit | 117.9 | 97.92 | 112.61 | 129.5 | 148.93 |
| OPM % | 13.80% | 10% | 10% | 10% | 10% |
| PBT | 109.66 | 87.92 | 102.61 | 119.5 | 138.93 |
| PAT | 82.01 | 65.94 | 76.96 | 89.63 | 104.19 |
| Net worth | 349.61 | 412.25 | 485.36 | 570.51 | 669.49 |
| ROE |  | 18.90% | 18.70% | 18.50% | 18.30% |

I have assumed a dividend payout ratio of 5% in line with what the company has done historically and made rough assumptions based on past data to arrive at the above table. Interestingly the high base of FY21 would result in earnings CAGR over the next five years of only 6%. Similarly, if we look at PAT growth over five years starting from FY20 instead of FY21, the earnings CAGR is only about 5%. The ROE seems to now hover around the 18-19% mark.

If you assume that the company would ramp up the payout and decide to use 20% as long-term ROE and 6% as earnings growth, then the PBV multiplier will be (0.20-0.06)/ (0.12-0.06) = 2.33x. If the earnings growth assumption is 8%, the PBV will 3x. The PBV that you can ascribe is significantly lower than the initial estimate of 5.5x.

One aspect we are ignoring is the high growth at which the company has been growing. Over time, with everything else remaining the same, the PAT growth should be closer to top-line growth. How to manage the abnormal growth i.e., growth more than the required rate of return by tweaking the valuation model, is something we will discuss in another chapter. However, in this case, the earnings growth rate does not seem to be high if you exclude the aberration in FY21.

The case discussed above shows some classical signs of cyclicality, which are easier to spot. There may also arise situations where a company can report a jump in margins and then sustain it for a few years, tempting you to assume that the margins will stay that way. For example, a chemical manufacturer may temporarily enjoy high and stable margins due to some anti-dumping duty imposed on the same product. An export-driven pharmaceutical company may enjoy a similar high margin for a few years until more competitors get the requisite approvals for manufacturing the product and start hitting the same market. There could also be a situation when a company procures a short-term order to supply some goods at a high margin. In all these cases, what can protect you is your knowledge of the underlying business. Nothing can substitute this. You need to clearly understand what is driving the increased margins that the company is delivering recently if you encounter a case where valuations look attractive based on the recently reported ROE and margins.

To conclude

- Always focus on the long-term performance of a company. Analyze it in blocks of 3 years, 5 years, or 10 years to understand the cyclicality of the business and the long-term trends in margins and ROE.
- Getting carried away by near term superior results may lead to poor buy decisions, and near-term bad results can lead to poor sell decisions.
- You can make assumptions closer to latest trends only if you have reasons to believe that there are structural developments that will lead to the sustainability of recently witnessed trends.
- Normalizing the financials helps you to get a better handle on the assumptions you need to use.

The market often over-reacts to near term trends. In this context, stable profit-making moderately cyclical companies are generally a good hunting ground to identify reasonably priced businesses.

# Repay the debt – Reap the benefits

Until now, we discussed reasonably stable and profitable companies, closer to a maturity stage as far as growth is concerned. We will now examine a few alternate quantitative value-investing frameworks before returning to our initial model and adjusting it for high earnings growth. In the model that we discussed, our emphasis was on the ROE of the company and using it as a primary driver for estimating the fair market value. In this chapter, we explore the opportunities that arise in companies with high debt, but healthy free cash flows. We talk about the need to have adequate cash flows accompanying profits as a desirable feature and a measure of the quality of accounts. However, in some of these cases where we look for this theme, there will be good cashflows but low reported profits. Since there is a low reported profit, the ROE based on reported earnings is meaningless.

The academic foundation for the approach can probably be traced back to Modigliani and Miller's capital irrelevance principle, which states that in a world with zero taxes (sic), a firm's capital structure is irrelevant. In other words, businesses need capital. The two sources of capital are debt and equity in one form or the other. The enterprise value of two identical companies with a similar capital requirement, one fully funded with equity and the other, which has a mix of debt and equity is the same. If we extend this argument, the value of equity in a company with both debt and equity should increase to the extent of debt repaid. This principle leads to a few worthwhile investment opportunities in companies where the ratio of debt to market capitalisation is high.

Such situations typically arise in businesses which involve a high upfront capex, with not much maintenance capex. The upfront capex is often debt funded. The upfront capex often leads to depreciation much higher than the maintenance capex. Warren Buffett talks about owner earnings as a concept, which takes the profit plus depreciation less maintenance capex adjusted for the impact of change in working capital as a proxy for the real earnings of a company. He calls it owner earnings. In many cases, the depreciation and maintenance capex often match each other over a period. But for companies that fall under this theme, depreciation is generally higher than maintenance

capex. The investor gets an opportunity when the cash generated from the business is used to repay the debt.

The companies may also have a high-interest cost as the D/E ratio, which many financial institutions monitor for rate setting, is often high in such companies. As the debt paydown happens and the D/E ratio comes down, the companies usually refinance their debt at lower rates. So, there is a virtuous cycle of debt repayment accompanied by lower rates on the remaining debt outstanding. The profit after tax often turnaround and then starts increasing non-linearly. ROE also starts trending up. More returns are made on companies that begin with a low ROE, which trends up to a stable level, than on companies with high stable ROEs.

In the table below, I have presented the snapshot of an equipment leasing company, which is a good example of the type of companies that fall into this theme.

| | FY18 | FY19 | FY20 | FY21 |
|---|---|---|---|---|
| Sales | 228.4 | 282.4 | 322.87 | 223.89 |
| EBITDA | 103.62 | 102.15 | 160.05 | 116.45 |
| Other Income | 20.05 | 12.86 | 3.33 | 29.14 |
| Op. Profit | 83.57 | 89.29 | 156.72 | 87.31 |
| OPM % | 36.60% | 31.60% | 48.50% | 39.00% |
| Depreciation | 136.73 | 140.82 | 140.38 | 122.1 |
| Interest | 54.75 | 47.59 | 41.03 | 26.3 |
| PBT | -87.86 | -86.26 | -21.36 | -31.95 |
| PAT | -57.48 | -58.06 | -6.6 | -22.42 |
| Net worth | 788.96 | 733.19 | 726.43 | 709 |
| ROE % | -6.70% | -7.40% | -0.90% | -3.10% |
| Total Debt | 539.44 | 444.58 | 311.99 | 196.87 |
| Cashflow from Operations | 126.45 | 127.85 | 163.18 | 118.9 |

The important row to watch is depreciation, which is high, and converts a healthy EBITDA into a negative PBT. The other key row to watch is the total debt and how it has decreased over the same period. The following table shows how effective the company has been in deploying the cash flows generated to pay down the debt

| | |
|---|---|
| Cash flow from operations from FY18-FY21 | 536.38 |
| Interest paid during the period | 169.67 |
| Debt repaid during the period | 342.57 |
| Debt + interest | 512.24 |
| As a % of Cash Flow from operations | 95% |

The total cash generated from operations between FY18 and FY21 was 536 Cr. The company paid interest of 170 Cr – starting with 55 Cr in FY18 and ending with 27 Cr in FY21. The company repaid debt of 342 Cr. Thus almost 95% of the cash flow from operations was used to service debt and interest.

In many such companies, pushed to the brink due to indebtedness, the company management proactively takes every possible step to squeeze the assets and repay the debt. Often non-core assets are also sold to increase the speed of debt repayment. In some cases, they may raise fresh capital.

One way of looking at such cases is to go by historical valuation data. EV/EBITDA can be a good proxy. A company's enterprise value is its market capitalisation plus net debt on the balance sheet. Historical EV/EBITDA is often reasonably stable in such companies. Other ratios like PE, PBV, or ROE are not that useful when the company is reporting losses. For illustration, let us assume that the EV/EBITDA that the company enjoyed historically is 10x and this multiple can be used to estimate the fair market value of the company, the market fluctuations in the interim notwithstanding. So, in FY18, the fair enterprise value will be 84x10 = 840 Cr. Since the debt in FY18 was 539 Cr, the fair market value of equity, based on this valuation, will be 301 Cr. In FY21, the EBITDA is 87 Cr, and hence the fair enterprise value will remain nearly the same at 870 Cr. However, the debt is now down to 197 Cr, which implies that the fair market value of equity should be about 673 Cr. In effect, over a period from FY18 to FY21, the calculated fair market value of equity has gone up from 301 Cr to 673 Cr. This increase implies a return of almost 2.2x over three years.

At the same enterprise value, when debt gets replaced by equity with the company repaying the debt through operating cash flows, the investors generate a remarkably high return. In the example we discussed, the company's market capitalisation moved from 766 Cr in FY18 to 480 Cr in FY19 to 212 Cr in FY20 to 432 Cr in FY21, and at the time of writing this chapter, the market capitalisation is close to 1,000 Cr. So, the market provided entry opportunities in the interim

despite the company being loss-making at the income statement level. You need a good handle on the company's fair market value to identify these good entry points. Once the debt-to-equity ratio is under control, you re-evaluate the position like any normal long position.

When the debt increases and becomes substantial compared to the equity, the stock behaves more like a call option. The payoffs can become non-linear as debt gets substituted with equity. Like a call option or any other derivative, the risk associated with such opportunities is also high. Since the return on investment, if the hypothesis plays out, is high, you can generate a satisfactory return at the portfolio level even with a small initial exposure. Position sizing is critical as the initial premise should be that the hypothesis can be wrong and capital loss is a distinct possibility.

Benjamin Graham wrote about '*the rule of minimum valuation*'. He said, "An equity share representing the entire business cannot be less safe and less valuable than a bond having a claim to only a part thereof." This is another version of the same theme, wherein we say that a company must be worth at least as much as the debt that it can comfortably support. Technically speaking, a company with a low debt to equity ratio can borrow money that it can comfortably service and distribute it to its shareowners. Hence, the company is worth at least as much as the amount that it can comfortably borrow. However, this is a theoretical possibility, and few companies would want to indulge in such a recapitalization exercise. I would suggest we value these companies as straight equity positions and focus on their capital allocation decisions and ROE trajectory. **What the companies do is always more important than what the companies can do.** Recapitalization is something the company can do, but debt repayment is something the company does. Debt repayment is hence a powerful investment theme.

Debt repayment themes evolve over a period. Markets also react slowly as the situation unravels itself. The advantage of this theme is that if you can reasonably predict the cash flows, you can easily quantify what the expected upside is going to be, as the upside will be almost equal to the debt that the company will repay. There may also be situations when a company gets a sudden windfall, and the proceeds are used for debt repayment. This windfall can come from selling historical investments, real estate, non-core operations, or some loss-making divisions. However, the markets generally react quickly to such announcements and do not provide you with many entry opportunities immediately when the announcement arrives. However, you may benefit if you re-estimate the fair market value based on the new development. The time between such announcement

of gains and the actual numbers reflected in the financials can be long, especially if it involves the sale of business units or divisions. So, keep such situations on your radar. In the interim, if the market's initial enthusiasm fizzles out, you may get a few good opportunities.

While I was almost winding up this book, an announcement from the company HSIL Ltd. Caught my attention. The company announced a transfer of a business division for cash, and the immediate market reaction was consistent with the theoretical approach described earlier. I deviate from the path I am adopting in general for this book by naming the company here where this development happened. This is also the only case study where I have used the 9MFY22 financials also.

HSIL has two business verticals - the packaging division and manufacturing of building products division, which it does for another group company SHIL. That HSIL and SHIL in current form were the outcomes of a demerger process that happened recently is another matter that we will not delve upon now. What was happening was that the manufacturing of building products was earning a sub-optimal return on equity. The summary of the results of the two segments is as follows:

| Amount in Cr | FY19 | FY20 | FY21 | 9MFY22 |
|---|---|---|---|---|
| Sales | | | | |
| Packaging | 1097 | 1242 | 1259 | 999 |
| Building Products | 494 | 580 | 583 | 602 |
| Total | 1,591 | 1,822 | 1,842 | 1,601 |
| EBIT | | | | |
| Packaging | 90 | 153 | 196 | 162 |
| Building Products | 22 | 20 | 0.91 | 16 |
| Total | 112 | 173 | 196.91 | 178 |
| EBITM % | | | | |
| Packaging | 8.20% | 12.30% | 15.60% | 16.20% |
| Building Products | 4.50% | 3.40% | 0.20% | 2.70% |
| Total | 7.00% | 9.50% | 10.70% | 11.10% |
| Capital Employed | | | | |
| Packaging | 584 | 694 | 833 | 942 |
| Building Products | 532 | 453 | 358 | 322 |
| Total | 1,115 | 1,148 | 1,191 | 1,264 |
| ROCE % | | | | |
| Packaging | 15% | 22% | 24% | 23% |
| Building Products | 4% | 4% | 0% | 7% |
| Total | 10% | 15% | 17% | 19% |

The company had a debt of 1042 Cr as of 30th Sep 2021. While many investors were still scratching their heads as to why the company did not separate the two business verticals during the initial demerger process itself the company came out with an announcement that they have now decided to sell the building products manufacturing division to SHIL on a slump sale basis for a cash consideration of 630Cr. The company's vice chairman commented, *"The cash proceeds will be used to pre-pay existing bank borrowings and increase cash reserves."*

There are two stories at play here. The first one is the significant amount of debt reduction that will happen. The second is that the business division earning a return even lesser than the cost of debt would now be going away, leading to a significant improvement in the overall ROE of the company. Even better, the net worth of the division getting transferred was 475 Cr, and hence this sub-optimal division was getting about 30% more than its book value. Usually, such low return businesses trade at less than book value.

Now let us see how the stock price of HSIL reacted to this announcement:
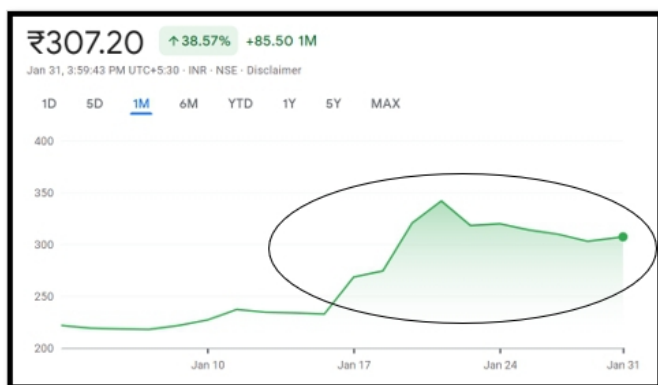


The stock traded at 230 just before the announcement. With about 6.47 Cr shares outstanding, this implied a market capitalization of 1488 Cr. The debt in the balance sheet was 1042 Cr which meant that the enterprise value was 2530 Cr. 9MFY22 EBITDA was 251 Cr. The 9M numbers were not published when the deal was announced, but there was no major surprise in the results. So let us assume that the full-year EBITDA would be about 335 Cr, which meant that before the announcement, the EV/EBITDA was 7.6x.

From the price chart, we can see that the stock settled around 310 after the announcement. The post-announcement market capitalization is 2006 Cr. The net debt will now be 1042-630 = 412 Cr, which means the EV is 2006 + 412 = 2418 Cr.

Interestingly, the pre and post announcement enterprise value was similar at about 2500 Cr. However, replacing debt with equity meant that the shareholders received a one-time pop of about 35%.

Does it make HSIL a good buy at 310? We do not know. The market seems to have given full credit for debt repayment. As of now, the company has not seen a re-rating as the price increase witnessed is more of the investors replacing one form of capital with another. But future returns will depend solely on future performance from this point onwards. The company has an opportunity at hand. They now

have a company that can report a much better ROE from operating assets at an enterprise level.

The Vice-Chairman of the company has said, *"This transaction will have a transformative impact on the market positioning and growth prospects of HSIL. The company will emerge as a focused packaging company, well-positioned to implement its strategic plans to drive the packaging business and continue to unlock value for all stakeholders."*

Markets will keenly look forward to the execution of this now "focused company."

In this case, the inflow of cash was one-time due to the sale of assets, and hence the market reaction was quick. But, in cases where the cash flow is from operations and debt reduction happens gradually, as was the case in the equipment leasing company, the market gave time to the investors to make a reasonable forecast of how debt paydown will happen and play this theme accordingly.

While the initial market reaction is quick, many a time, the rally may fizzle out later, and you may end up getting the same company at much lower prices as the euphoria subsides with the transaction taking its own sweet time to fructify. Corporate restructuring can tire out the investors seeking instant gratification.

# Buying back your way to riches

$A$ buyback or stock repurchase is a capital allocation strategy wherein the company uses the cash in its books to buy its shares from the shareholders and extinguishes the shares, resulting in a decrease in the number of shares outstanding. The net worth also decreases, resulting in the company's future earnings getting distributed over a lower number of shares. An alternate way to look at a buyback is as if the company has made an acquisition in the same line of business using the cash in the books, but instead of buying the shares of a competitor, it has bought more of its shares. Companies usually use the surplus cash in the balance sheet for the buyback. Since the surplus cash earns sub-optimal returns, deployment of this cash in a buyback often leads to an ROE improvement.

Warren Buffett has batted for buybacks as an efficient capital allocation tool when the business is available at attractive valuations. He said, "When stock can be bought below a business's value, it is probably the best use of cash." In the case of dividends, all shareholders are paid in proportion to their ownership. In buybacks, you can decide whether to participate in it or not. If you feel that the buyback price is lesser than the fair value, it makes sense to not participate in the buyback. If you do not participate in the buyback, it increases your ownership of the company. If you feel that the buyback is happening at or above the fair value, you have an option to tender the shares. The impact of the buyback is on the remaining shareholders. If all the shareholders tender all their shares in the buyback, the buyback is technically equal to a dividend.

In the earlier chapter, I mentioned that investors may penalise companies that do not deploy capital appropriately. Many a time, investors value the cash lying in the books at a discount to fair value. When such companies use the cash balance for buybacks, there will be value unlocking which will benefit shareholders. I will explain this using a simple example and then delve into a case study.

Let us take a company XYZ Corporation that has 100 shares outstanding. Let us assume that the fair value of the company's operations is 9,000, and it has 1000 as surplus cash. If the investors value, the cash without any discount then the company's market value will be $9,000 + 1000 = 10,000$. The price per share will be

10,000/100 = 100. If this company goes for a buyback of 10 shares at 100 per share, its per-share fair value will decrease to 9,000 as 1,000 is distributed to shareholders who tender their shares. Since 10 shares are bought back and extinguished only 90 shares remain outstanding. The per-share value of the remaining shares will be 9,000/90 = 100. So, when buyback happens at fair value, the investors are indifferent to holding the shares versus tendering the shares.

But like we discussed, investors generally do not prefer companies holding surplus cash that earns a risk-free rate of return. They value this cash at a discount. Let us assume that investors of XYZ Corp. value the cash at a discount of 50%. So, the company's market value will be 9,500, with the operations valued at 9,000 and cash valued at 500. The per-share price will be 9,500/100 = 95. If the company can buy back shares worth 100 for 95, 10.53 shares can be bought back. The remaining shares are 100 -10.53 = 89.47. The per share value post buyback will be 9000/89.47 = 100.59. So, the total value has increased by

$$89.47 \times 100.59 + 1000 - 9500 \approx 500$$

What has happened here is that the discount to the fair value of cash has now disappeared. Thus, for stocks selling below their fair value, a buyback can be an effective tool to bridge the gap between market price and fair value. Since the capital earning sub-optimal returns has been removed from the balance sheet, the ROE of the business at an enterprise level also sees an uplift.

Buyback below the fair value of the stock is value accretive to shareholders, especially to those who do not tender. In the above example, let us assume that a shareholder owns 10 shares out of 100 before the buyback. He feels that the buyback is happening below the fair value of the stock and refuses to tender his shares. His pre-buyback ownership was 10% of the company. His post buyback ownership will be 10/89.47 = 11.2%. Without doing anything, the investor gets the same effect of buying more of the company's shares from the other shareholders. What the promoters do in a buyback is a critical data point that you should note. When the promoter refuses to participate in the buyback, it is essentially an act of the promoter reposing more faith in the business, which is often an indicator of the near to medium-term business prospects of the company.

Now let us jump from the hypothetical example to a real-life case study. In this case study, I am presenting the example of a company which I always considered a cash hoarder. Suddenly the company decided to go for a buyback, the quantum of which was sizeable

compared to its market capitalisation, leading to its discussion in this chapter to illustrate the impact of buyback on the stock price. This company is an auto spare parts dealer with a reasonably steady operation. The financial snapshot of the company is as follows:

| | FY16 | FY17 | FY18 | FY19 | FY20 |
|---|---|---|---|---|---|
| Sales | 415.12 | 387.42 | 327.17 | 355.76 | 361.93 |
| Op. Profit | 17.21 | 17.68 | 15.21 | 18.58 | 15.01 |
| OPM % | 4.10% | 4.60% | 4.60% | 5.20% | 4.10% |
| Other Income | 3.84 | 4.4 | 5.29 | 6.48 | 5.58 |
| PBT | 20.07 | 21.03 | 19.36 | 23.94 | 19.4 |
| PAT | 13.22 | 13.82 | 12.83 | 16.19 | 14.22 |
| Dividends paid | 2.39 | 2.37 | 2.39 | 2.39 | 2.98 |
| Net worth | 126.36 | 137.78 | 150.27 | 160.03 | 173.23 |
| Cash + Investments | 59 | 78 | 93 | 88 | 97 |
| PAT excl. OI | 10.69 | 10.93 | 9.32 | 11.81 | 10.13 |
| ROE from Ops | | 16% | 16% | 21% | 14% |
| Reported ROE | | 11% | 9% | 11% | 9% |
| MCAP | 109.28 | 118.31 | 127.99 | 98.7 | 54.98 |
| P/BV | 0.86 | 0.86 | 0.85 | 0.62 | 0.32 |

The snapshot clearly shows how the company has accumulated quite a lot of cash compared to its net worth.

I have calculated both the reported ROE and ROE from operations. You will remember that we calculate ROE from operations by removing the impact of other income from the income statement and cash and equivalents from net worth. If I use the geometric mean method, the operating ROE is around 16.6%. Let me use 16%. There is not much growth which is happening. A 16% ROE with no growth should have a PBV as per the model of $0.16/0.12 = 1.33x$. The net worth excluding cash is around $[173-97] = 76$. A 1.33x multiplier gives us 101 Cr as fair market value for FY20. I am doing this analysis for each year to understand the value that the market ascribes to the cash in the books.

|  | FY16 | FY17 | FY18 | FY19 | FY20 |
|---|---|---|---|---|---|
| Net worth | 126 | 138 | 150 | 160 | 173 |
| Cash + Investments | 59 | 78 | 93 | 88 | 97 |
| MCAP | 109 | 118 | 128 | 99 | 55 |
| P/BV | 0.86 | 0.86 | 0.85 | 0.62 | 0.32 |
| Core business at 1.33x operating net worth | 89.59 | 79.51 | 76.17 | 95.8 | 101.39 |
| Value of cash | 19.69 | 38.8 | 51.82 | 2.9 | NM |
| Discount to cash | -67% | -50% | -44% | -97% | NM |

Until FY18, the stock was trading at about 0.85x book value, after which the price fell significantly due to market conditions. Of course, I am not here to give a discourse on the investment returns that you would have made by investing in this stock at the end of FY20. The COVID-19 correction was so savage and subsequent recovery so sharp that most stocks delivered good returns during the period.

Let me come back to the point of buyback. In FY21, the company decided to go for a 25 Cr buyback. By the time the buyback was announced the market capitalization had recovered to about 100 Cr. So, the buyback amount was almost equal to 25% of the company's market capitalization.

Let us do a thought experiment. Assume that the company generates the same PBT as FY20 in FY21. The PBT in FY21 would then be 19.4 Cr. Let us remove the other income on the 25 Cr earmarked for the buyback. Say at 6% the other income could be 1.5 Cr. The adjusted PBT would be 17.9 Cr, and PAT would be 13.5 Cr if we assume the tax rate as 25%. Since net worth at the beginning of FY21 was 173 Cr, if the company pays 3 Cr as the dividend, which is the same as the dividend paid in FY20, the net worth at the end of FY21 would be $173 + 13.5 - 25 - 3 = 158.5$ Cr. Had the buyback not happened, the net worth would have been 183.5 Cr. Assuming that PAT less dividend is cash accrued to the balance sheet, the cash balance would now be only $97 + 13.5 - 3 - 25 = 82.5$ Cr instead of $97 + 13.5 - 3 = 107.5$ Cr. Whether the buyback happens or not, the operating net worth does not change and remains the same at $158.5 - 82.5 = 183.5 - 107.5 = 76$ Cr. The fair market value for operations will hence be $76 \times 1.33 = 101$ Cr. So, when the company goes for a buyback at a market capitalization of 100 Cr, probably the cash in books was getting a zero valuation. Even after a 25 Cr buyback, the fair market value does not change, but shareholders, as a group, would have received a 25% return on investment.

This return happens because the discount on the cash balance used for buyback falls from 100% to 0% as soon as the distribution happens. While this is a case of extreme undervaluation, in many such

companies, buybacks also lead to a rerating of the cash hoarder as the company has now demonstrated an intention to distribute the surplus cash in the books. This change in attitude reduces the discount given to the cash balance by the investors. There is still about 82.5 Cr expected to be left on the balance sheet, and if investors decide to narrow the discount on this cash to 50% from 100%, then that can generate another 40% return on investment.

Let us also see what the promoters did in the process. Extreme undervaluation is a situation where the promoter would usually want to increase his stake in the company. He can do it without bringing in any additional amount by not taking part in the buyback. When the buyback is restricted to non-promoters, the promoter stake goes up automatically. For example, in this case, the promoter stake in the company was 39% pre-buyback. The buyback reduced the share count by 25%. When he decided to abstain from buyback, his post buyback shareholding became 39/75 = 52%. Thus, by distributing the cash lying in the company for which he was getting little value, he increased his stake in the company by a whopping 13%. His share of cash balance in the books in money terms almost remains the same even after the buyback.

How the promoter behaves in a buyback is often a lead indicator of the ensuing performance. After completing the buyback in the early part of FY21, the result of the company in FY21 was as follows:

|  | FY20 | FY21 |
|---|---|---|
| Sales | 361.93 | 388 |
| Op. Profit | 15.01 | 25.5 |
| OPM % | 4.10% | 6.60% |
| Other Income | 5.58 | 6.82 |
| PBT | 19.4 | 31.28 |
| PAT | 14.22 | 23.12 |
| Dividend | 3 | 4.6 |

Look at the dividends paid. The payout ratio was maintained despite a significant cash outflow for the buyback. With significantly higher promoter ownership, the future dividends may also be increased. FY21 net worth was about 163 Cr, and ROE based on FY21 numbers is 14%. The buyback seems to have helped the company reach a situation where, the ROE of at least 12% (including the cash in books) can be achieved, which may lead to the market ascribing a value of 1x book value or 163 Cr of fair market value. Even when one goes before

FY18, the company was generating 9-10% ROE, on an overall basis, and was getting a valuation of about 0.8 times. As I am writing this chapter, the company's market capitalization is 150 Cr, up from 100 Cr when the buyback started.

A movement from low PBV to normal PBV also generates a healthy return. In this case, the PBV moved from 0.32x to 0.9x, which means a near 2.8x return. Add to that the return due to the buyback of 25%. Even in not so glamorous businesses, such corporate actions can trigger a change in investor outlook towards the stock leading to good returns. Buyback is always a good hunting ground for new stock ideas. More so when it involves a cash hoarder changing its attitude towards shareholders by improving the capital allocation.

**Using buyback as a regular capital allocation tool**

We saw how a large-sized buyback leads to significant value creation when the company is significantly under-priced. Now, I will discuss another category of companies which engage in regular buybacks, more like an ongoing capital allocation strategy. Mostly in mature industries with not much capex needs, regular buyback leads to companies maintaining a higher ROE with the earnings per share growth higher than PAT growth. The decision between buyback and dividend often also depends on which is more tax efficient.

I am providing herewith the financial snapshot of a capital goods company that engages in such regular buybacks.

| | FY17 | FY18 | FY19 | FY20 | FY21 | H1FY22 |
|---|---|---|---|---|---|---|
| Sales | 98 | 114 | 123 | 81 | 114 | 70 |
| Op. Profit | 33 | 41 | 46 | 24 | 45 | 27 |
| OPM % | 34% | 36% | 37% | 30% | 40% | 39% |
| Other Income | 10 | 8 | 8 | 6 | 6 | 4 |
| PBT | 38 | 45 | 50 | 26 | 48 | 29 |
| PAT | 31 | 34 | 39 | 21 | 36 | 22 |
| Share capital | 7.35 | 6.91 | 6.91 | 6.46 | 6.46 | |
| Reserves | 180 | 170 | 194 | 140 | 165 | |
| Net worth | 188 | 177 | 201 | 147 | 172 | |
| Cash in books | 104 | 99 | 120 | 69 | 94 | |
| ROE | | 18% | 22% | 11% | 25% | |

We can see that the share capital is coming down consistently, which is happening due to buybacks. As I prepare this chapter, the company has announced another buyback of 42 Cr. We can assume that 9 Cr could be the buyback related tax expenses, and FY22(E) PAT is 45 Cr. If the company distributes about 12 Cr as dividends, the FY22(E) net worth can be $172+45-12-42-9 = 154$ Cr. In FY23, if PAT remains at 45 Cr, the ROE can be $45/154 = 29\%$. As cash gets deployed as

buyback, the ROE trends upwards.

The impact of the regular buyback is evident in the following table:

|  | FY17 | FY18 | FY19 | FY20 | FY21 | CAGR |
|---|---|---|---|---|---|---|
| EPS | 20.96 | 24.29 | 27.95 | 16.54 | 27.98 | 7.50% |
| PAT | 30.81 | 33.57 | 38.63 | 21.37 | 36.15 | 4.10% |

We already know how critical the growth factor is in valuation and how sensitive the PBV multiple is to growth. From the table, it is evident that regular buyback has ensured earnings per share growth at a CAGR of 7.5% versus the 4.1% growth of PAT.

The next important thing to analyse is the attractiveness of the company's core operations. Buyback simply means that the cash is deployed to buy more of the same operations. I have done that analysis in the table below to estimate the operating ROE, which you should be familiar with by now.

|  | FY17 | FY18 | FY19 | FY20 | FY21 |
|---|---|---|---|---|---|
| PAT adj. for other Income | 23.07 | 27.49 | 32.64 | 16.68 | 31.49 |
| Net worth adj. for cash | 83.39 | 78.36 | 81.16 | 77.71 | 78.13 |
| Op. ROE % |  | 33% | 42% | 21% | 41% |

We can see that the core operations generate a good ROE, and cash used to purchase more of the operating business is not a bad idea if the valuations are reasonable. Such a capital allocation strategy performed consistently would mean that the company is sending out a message to shareholders that the company will return the surplus cash, and ROE will not get impacted due to cash accumulation in the balance sheet.

The promoter ownership is also a vital factor to consider as the tax treatment difference between buyback and dividends can also influence which tool is being used by the promoter. While preparing this chapter, the dividends are taxed just like any other income in the hands of the investor at the applicable tax rate. But buyback is tax-free in the hands of the investor as tax is paid by the company. The promoter ownership in the company is >70%. Buyback is probably more tax-efficient for the promoter, and hence consistent buyback would probably continue for more time to come if the tax structure remains skewed.

A global company that deploys considerable amounts of capital to buy back its shares has been Apple Inc. After several years even Mr Buffett has started employing share repurchases to return a large amount of cash accumulated on Berkshire's balance sheet. In a recent annual letter, Buffett spoke eloquently about the power of share repurchases as both Apple and Berkshire were indulging in buybacks. I am

reproducing that section as it is best to read it in Buffett's own words.

*Last year we demonstrated our enthusiasm for Berkshire's spread of properties by repurchasing the equivalent of 80,998 "A" shares, spending $24.7 billion in the process. That action increased your ownership in all of Berkshire's businesses by 5.2% without requiring you to so much as touch your wallet. Following criteria Charlie and I have long recommended, we made those purchases because we believed they would both enhance the intrinsic value per share for continuing shareholders and would leave Berkshire with more than ample funds for any opportunities or problems it might encounter. In no way do we think that Berkshire shares should be repurchased at simply any price. I emphasize that point because American CEOs have an embarrassing record of devoting more company funds to repurchases when prices have risen than when they have tanked. Our approach is exactly the reverse.*

*Berkshire's investment in Apple vividly illustrates the power of repurchases. We began buying Apple stock late in 2016 and by early July 2018, owned slightly more than one billion Apple shares (split-adjusted). Saying that I am referencing the investment held in Berkshire's general account and am excluding a very small and separately managed holding of Apple shares that was subsequently sold. When we finished our purchases in mid-2018, Berkshire's general account owned 5.2% of Apple. Our cost for that stake was $36 billion. Since then, we have both enjoyed regular dividends, averaging about $775 million annually, and have also – in 2020 – pocketed an additional $11 billion by selling a small portion of our position. Despite that sale – voila! – Berkshire now owns 5.4% of Apple. That increase was costless to us, coming about because Apple has continuously repurchased its shares, thereby substantially shrinking the number it now has outstanding.*

*But that is far from all of the good news. Because we also repurchased Berkshire shares during the 2 1/2 years, you now indirectly own a full 10% more of Apple's assets and future earnings than you did in July 2018. This agreeable dynamic continues. Berkshire has repurchased more shares since yearend and is likely to further reduce its share count in the future. Apple has publicly stated an intention to repurchase its shares as well. As these reductions occur, Berkshire shareholders will not only own a greater interest in our insurance group and BNSF and BHE but will also find their indirect ownership of Apple increasing as well. **The math of repurchases grinds away slowly but can be powerful over time.** The process offers a simple way for investors to own an ever-expanding portion of exceptional businesses. And as a sultry Mae West assured us: "Too much of a good thing can be . . . wonderful."*

# Tangible returns from intangible assets

$M$any companies end up with a reasonably large amount of intangible assets in the fixed assets block due to some corporate actions. The intangible assets bloat the balance sheet and depress the reported ROE. Unlike tangible fixed assets, fresh capital investments are not necessary for maintaining intangible assets. As the company grows, the effect of intangible assets starts decreasing, and the ROE starts increasing. Investors often end up with good returns when a company demonstrates a trend of rising ROE.

Estimating the operating ROE without considering the impact of the intangible assets often gives good insights into the attractiveness or otherwise of the core operations of a business. Let us take the hypothetical case of a company with a net worth of 100 and a reported profit after tax of 15, which means that the ROE is 15%. If this ROE is sustainable, then the fair PBV at 8% growth will be 1.75x, implying a fair market value of 175. Let us now assume that the asset side has intangible assets of 50 created during an acquisition. Let us further assume that the company is not doing any amortization of the intangible asset. This means that if adjusted for the intangible assets, the net worth is only 50. The ROE is 15/50 = 30%. This ROE implies that the company has a fair PBV of 5.5x. So, the company's fair value will be 5.5 * 50 = 275. Adjusting for intangible assets makes a substantial difference to the valuation estimate. This difference happens because as the ROE approaches the required rate of return, the value of growth keeps reducing and becomes zero when the ROE becomes equal to the required rate of return. Assuming a sustainable ROE closer to the reported ROE suppressed by the intangible assets leads to erroneous conclusions.

In the following table, I am presenting the financial snapshot of a media company which can generate healthy free cash flows thanks to the nature of the business. The company also has a sizeable amount of intangible assets on the balance sheet.

|  | FY18 | FY19 | FY20 | FY21 |
|---|---|---|---|---|
| Sales | 1,475 | 4,943 | 5,175 | 4,498 |
| Op. Profit | 59 | 314 | 688 | 808 |
| OPM % | 4% | 6% | 13% | 18% |
| Other Income | 98 | 71 | 121 | 122 |
| PBT | 61 | 152 | 502 | 703 |
| PAT | 9 | 210 | 417 | 746 |
| Minority Interest | -1 | 44 | 174 | 290 |
| PAT | 10 | 167 | 242 | 456 |
|  |  |  |  |  |
| Net worth | 3,340 | 3,498 | 3,734 | 4,191 |
| Minority interest | 654 | 697 | 871 | 1,163 |
| Company's share of intangible assets | 1,419 | 1,419 | 1,419 | 1,419 |
|  |  |  |  |  |
| Net worth adjusted for intangible assets | 1,921 | 2,079 | 2,315 | 2,772 |
| ROE % | 0.40% | 8.70% | 11.70% | 19.70% |

The recent results have been provided for information.

|  | H2FY21 | FY21 | H1FY22 |
|---|---|---|---|
| Sales | 2709 | 4,498 | 2463 |
| Op. Profit | 599 | 808 | 430 |
| OPM % | 22% | 18% | 17% |
| Other Income | 63 | 122 | 61 |
| PBT | 565 | 703 | 413 |
| PAT | 628 | 746 | 394 |
| Minority Interest | 249 | 290 | 153 |
| PAT | 380 | 456 | 241 |

Considering the previous year's second-half numbers, the company seems to be on track to deliver 20%+ ROE in FY22. If the company manages its operating ROE around the 20% mark, the reported ROE will start increasing and eventually approach the operating ROE. The intangible assets in the gross block will remain static, thus ensuring that the reported ROE keeps increasing. Hence when we apply the PBV model, this adjustment needs to be made.

Let us assume that 20% ROE and 8% growth rate is sustainable. This assumption would mean that the PBV multiplier is 3x. The model gives a fair value of 3x2772 = 8316 Cr. Remember, we have used the net worth adjusted for intangible assets for calculating the ROE, and

hence the PBV multiplier is also applied to this adjusted net worth.

The reported ROE for FY21 is 456/3734 = 12.2%. If you had relied on this reported ROE of about 12%, then the PBV multiplier would have been 1x, and you would have valued the company at 1x4191 = 4191 Cr. The change in approach leads to the fair market value estimate of nearly two times that of the unadjusted approach. An ROE of 12% would mean that growth becomes irrelevant, while a higher ROE assumption leads to the value of growth getting captured in fair market value estimation. When the intangible assets are adjusted, the net impact is a higher ROE assumption to estimate the fair value.

Here we discussed a company where the intangible asset remains constant. Some companies depreciate intangible assets. Depreciation of intangible assets leads to the income statement getting impacted by the increased depreciation. Depreciation of intangible assets is called amortization. In such cases, as soon as the intangible asset is completely amortized the financials return to normalcy.

An example of a consumer goods company that followed such a policy is given below:

| | FY15 | FY16 | FY17 | FY18 | FY19 | FY20 | FY21 |
|---|---|---|---|---|---|---|---|
| Sales | 2,076 | 2,358 | 2,488 | 2,531 | 2,695 | 2,655 | 2,881 |
| Op. Profit | 541 | 688 | 759 | 719 | 725 | 685 | 880 |
| OPM % | 26% | 29% | 31% | 28% | 27% | 26% | 31% |
| Other income | 91 | 44 | 31 | 19 | 25 | 46 | 69 |
| Depreciation | 34 | 255 | 309 | 311 | 325 | 336 | 367 |
| Interest | 5 | 54 | 58 | 34 | 21 | 21 | 13 |
| PBT | 593 | 423 | 423 | 393 | 404 | 374 | 569 |
| Net Fixed assets | 453 | 1,918 | 1,994 | 1,802 | 1,680 | 1,459 | 1,132 |
| of which Intangible assets are | 24 | 1,490 | 1,231 | 991 | 856 | 605 | 340 |

We can see that the company is growing steadily like many consumer goods companies. The operating margin oscillates in a narrow range. But the company has made an acquisition in FY16, and mostly the assets are intangible, as is often the case in the consumer goods industry where a significant payment is for the brand value. This accounting led to the spike in depreciation charges from FY16 onwards. Here, there is a double whammy. The reported income went down, the balance sheet bloated, and the reported ROE witnessed a sharp fall. In this case, the ROE fell from about 50%+ to as low as 15%. In such cases, even if the operating results continue to improve, the sharp fall in ROE and reported numbers may lead to some overreaction by the market. In large and well-tracked companies, mispricing seldom happens as the company puts out detailed notes and explanations, and analysts tracking the company also make

necessary adjustments. But in smaller companies with not much research coverage, such situations may lead to promising investment opportunities. As far as this company is concerned, FY23 may see a jump in profits due to depreciation on intangible assets of about 250 Cr per year finally ending.

I hope now you are ready to attack the balance sheets with sizeable intangible assets affecting the financials. But be careful about the nature of the intangible asset before you start the adjustment. For example, a patent valid for 20 years and a revalued land require different treatments. In the case of a patent, it is probably the driver of a company's current earnings, which will get impacted once the patent period is over. It also requires to be depreciated as the useful life is defined. Adding back the depreciation to earnings can be considered, as it is a non-cash item. But using an ROE estimate based on current earnings can be dangerous as the earning profile can change once the patent expires. Traditional DCF is probably a better option here as the earnings and ROE can fall off a cliff once the patent expires. On the other hand, a revalued land sitting in the gross block and bloating the balance sheet without adding anything to the earnings is a classic case where the adjustment discussed here can be applied. One more point to note is whether the company can sustain organic growth. If the company primarily relies on acquisitions for growth, then the approach discussed may not be applicable. This is because the serial acquisitions will be akin to capital expenditure. So, serial acquirers must be treated differently compared to a company that has done a one-off acquisition which led to the creation of intangible assets in the first place.

Value investors often rely on various ratio-based stock screens to zero in on companies for further research. Websites like https://www.screener.in/ and software packages like Capitaline provide excellent service to investors desirous of running queries. However, in most common screeners, investors miss stock ideas like the ones discussed in this chapter as the reported ROE is often low. Quantitative value investors can create specific queries to identify such opportunities.

Another interesting area where you can extend similar analysis is companies which own shares of other listed entities. Earlier, the investments used to be valued in the balance sheet at cost. But after the accounting policy changes over the last few years, the companies are required to show their investments at market value. This has resulted in many companies which own strategic stakes in other listed entities (often belonging to the same promoter group acquired many years back) to mark up the value of their investments, thereby

bloating the net worth. The reported ROE for such companies also gets depressed. The adjustment to be made is similar to that of intangible assets by looking into the actual cost of acquisition of the investment and stripping out the notional capital gains. The ROE of the underlying operations after adjustments is calculated for further analysis.

# Stable dividends – stable returns

In this chapter, we will deal with a special category of companies. These companies are in the mature phase, have little capex requirements, and have a proven history of distributing most of their earnings as dividends. The companies that fit into this theme generally demonstrate a steadily increasing dividend stream over a long time. For this theme to work, the most important thing is that you need to be sure about the sustainability of the business and its ability to pay dividends. By sustainability, I mean the sustainability of both the industry and the company.

There are possibilities of an entire industry entering a decline phase. For example, if the take-up of electric vehicles increases rapidly, then several auto component industries may become sunset industries. There are also instances where the industry is growing, but the company will not be able to grow. For example, the Indian banking industry is expected to grow at a healthy clip. But several public sector banks are finding the going extremely tough.

In the companies that fit this theme, you should be able to convince yourself with reasonable confidence that the future does not look too different from the past. When such a company is indeed available, the one question that you need to answer is whether the dividend stream from this company can be considered equivalent to the income stream from risk-free fixed-income securities. In other words, should the cash that you receive consistently be subject to a different discount rate?

Warren Buffett, who always prefers investing in reasonably predictable businesses, uses the government bond interest rate as the discount rate. He then checks the discount at which the stock is available vis-a-vis its estimated value. This framework focuses on companies with reasonably predictable cash flows getting distributed as dividends. Hence, we can explore an approach similar to what Mr Buffet suggested.

Let us look at a consumer goods company which seems to tick most boxes as far as this theme is concerned. In the following chart I have presented the dividends paid by the company over time:
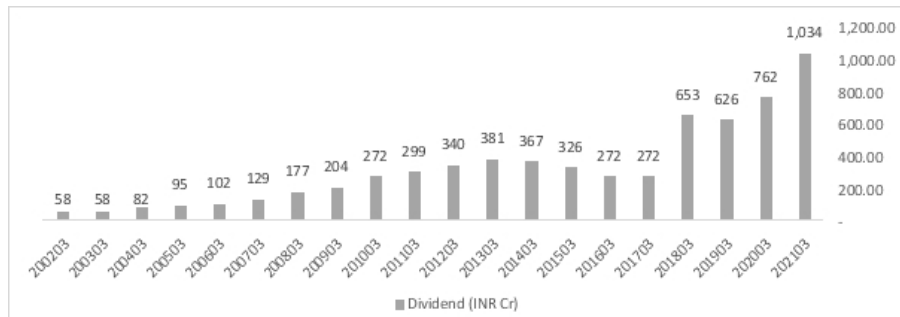
The company paid a dividend of 58 Cr in 2002 and currently pays a dividend of more than 1000 Cr. The ten-year CAGR of the dividend stream is 14%, and the five-year CAGR is almost 30%.

One way of looking at the situation is creating an equivalence with a high-grade bond. I am presenting a few scenarios from an illustration perspective. You can fine-tune the underlying assumptions as per your assessment.

Suppose there is a 10-year risk-free bond with a yield of 5%. The present value of the cash flow stream in the form of interest that we get using a discount factor of 5% is presented in the following table:

| Bond with a 5% coupon and a discount rate of 5% | | |
|---|---|---|
| Year | Inflow - Bond | Discounted - Inflow |
| 1 | 50 | 47.62 |
| 2 | 50 | 45.35 |
| 3 | 50 | 43.19 |
| 4 | 50 | 41.14 |
| 5 | 50 | 39.18 |
| 6 | 50 | 37.31 |
| 7 | 50 | 35.53 |
| 8 | 50 | 33.84 |
| 9 | 50 | 32.23 |
| 10 | 50 | 30.70 |
| Total | | 386.09 |

We get the total present value as about 386. Now, if we have a stock which gives dividends that increase at a rate of 5% every year, we can

calculate the starting dividend that would lead to the present value equal to that of the bond calculated earlier. We can use a simple goal seek function in excel to do this calculation.

| Stock with dividend increasing at 5% per annum and a discount rate of 5% | | |
|---|---|---|
| Year | Dividend - Stock | Discounted - Inflow |
| 1 | 40.54 | 38.61 |
| 2 | 42.57 | 38.61 |
| 3 | 44.69 | 38.61 |
| 4 | 46.93 | 38.61 |
| 5 | 49.28 | 38.61 |
| 6 | 51.74 | 38.61 |
| 7 | 54.33 | 38.61 |
| 8 | 57.04 | 38.61 |
| 9 | 59.89 | 38.61 |
| 10 | 62.89 | 38.61 |
| Total | | 386.09 |

We get the starting dividend yield of about 4%, which means that a dividend stream starting with a 4% yield and dividends increasing at 5% every year will be the same as a 5% constant yield over ten years.

What about the capital? We know that for a 10-year bond, we get an income stream of 50 for a face value of 1000 for ten years and at the end of ten years, we get back the principal of 1000. The present value of this bond is naturally 1000.

For stock, we must assume a capital value at exit. Assume that the stock will sell at a yield of 3% at the end of ten years.

When we redo the exercise, we find that the starting yield of about 2.4% is good enough to provide the same return as the fixed-income security. The workings are presented in the table:

| Bond with a 5% coupon and a discount rate of 5% | | | Stock with dividend increasing at 5% per annum and a discount rate of 5% | | |
|---|---|---|---|---|---|
| Year | Inflow - Bond | Discounted - Inflow | Year | Dividend - Stock | Discounted - Inflow |
| 1 | 50 | 47.62 | 1 | 24.23 | 23.08 |
| 2 | 50 | 45.35 | 2 | 25.44 | 23.08 |
| 3 | 50 | 43.19 | 3 | 26.71 | 23.08 |
| 4 | 50 | 41.14 | 4 | 28.05 | 23.08 |
| 5 | 50 | 39.18 | 5 | 29.45 | 23.08 |
| 6 | 50 | 37.31 | 6 | 30.93 | 23.08 |
| 7 | 50 | 35.53 | 7 | 32.47 | 23.08 |
| 8 | 50 | 33.84 | 8 | 34.1 | 23.08 |
| 9 | 50 | 32.23 | 9 | 35.8 | 23.08 |
| 10 | 50 | 30.7 | 10 | 37.59 | 23.08 |
| 10 | 1000 | 613.91 | 10 | 1,253.00 | 769.23 |
| Total | | 1,000.00 | Total | | 1,000.00 |

The final cash flow for the stock is 37.59/0.03 = 1,253, as we assumed the closing yield as 3%.

We conclude that a stock with a starting dividend yield of 2.4% and a yield of 3% at the end of ten years where dividends increase at 5% per annum during the period gives the same return as the fixed-income security of 5% constant yield over ten years.

This example explains why some stable companies often trade at extremely high PE ratios. If a company is trading at a 2% yield and has a payout ratio close to 100%, it effectively means that the PE ratio is 50x even though the growth in earnings is only 5%. We often say that a high PE multiple requires a high growth rate. While that is often the case, it may not be so in some situations like the one we discussed here as shareholders may have lower return expectations which propels the PE multiple.

If you feel that the dividend growth sustainability is for a longer period, say 20 years, the PE may increase further. You can try various permutations and combinations – a multistage growth model, varying tenures, different discount rates for dividends compared to the fixed income security, or different closing yield assumptions. Based on the assumption set you use, modify the framework to suit your comfort. You may also invert the equation and calculate what the market

anticipates as dividend growth at a given market price.

Companies in this category try to maintain a stable, increasing dividend stream. So, the stock's dividend yield usually oscillates in a narrow range around the median dividend yield. But within this range, you can often stumble upon some opportunities as the level of dividend yield gives reasonably good buy/sell indications. These companies, like what we saw earlier, enjoy healthy PE ratios. But the valuations are extremely sensitive to growth. We have already seen that the fair market value of any stock drops dramatically if the sustainable growth assumption decreases from, say, 8% to 4%. Hence, assessing the stability of the business and the company to churn out a regular increasing stream of dividends is the most critical step in the analysis. For the remaining part of the analysis, we can rely on mathematics.

In the chart below, I have plotted the dividend yield of the stable consumer company that we discussed earlier over more than ten years.
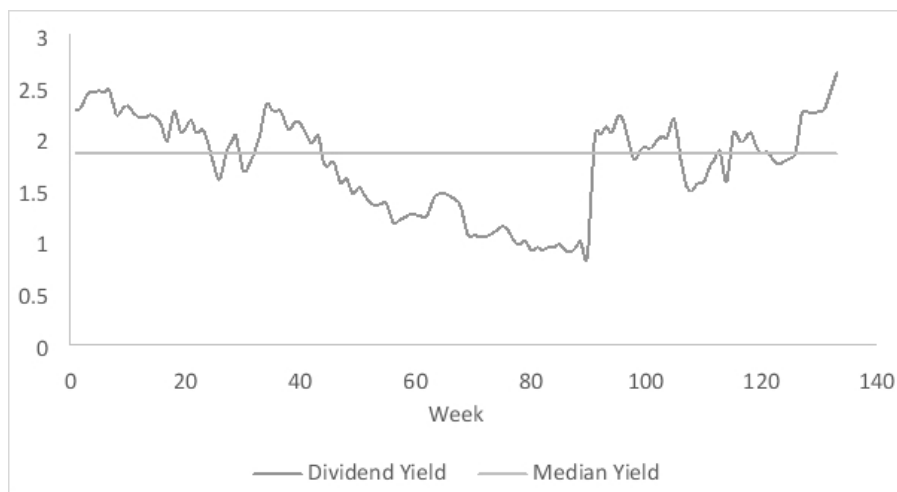


The maximum yield was 2.63%, while the minimum was 0.9%. The median dividend yield was 1.85%. While the range appears narrow, significant returns are generated even when the dividend yield moves within this range. For example, when the company's dividend yield changes from 2.5% to 1.5% due to price movement alone, everything else remains the same, the return on investment is 66%. Benjamin Graham's mercurial Mr Market often presents such opportunities that can be capitalized if you are reasonably confident that nothing else is amiss. Ensure that the fall in price that has bumped up the yield is not due to any deterioration of fundamentals that can threaten the sustainability of dividend payout.

I am reiterating that the company/industry fundamentals should not be under any threat that can impact the sustainability assumption. I am presenting the chart of another company here:
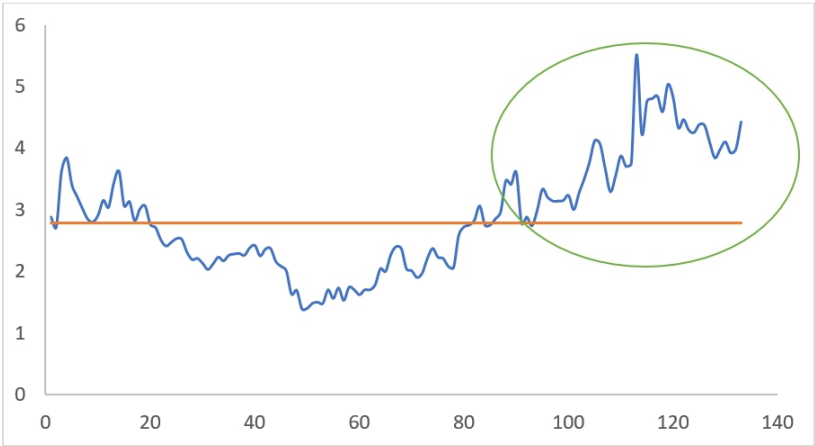


The dividend paid by the company is as follows:

| Year | Dividend (Cr) |
|------|---------------|
| FY20 | 544 |
| FY19 | 544 |
| FY18 | 495 |
| FY17 | 692 |
| FY16 | 544 |
| FY15 | 445 |
| FY14 | 371 |
| FY13 | 346 |
| FY12 | 346 |
| FY11 | 371 |
| FY10 | 371 |

In this case, it is evident that the market is now doubting the ability of the company to keep increasing the dividend stream. In cases like this, if the growth is past and not expected in the future, the de-rating can be permanent. Assuming the yield to revert to the historical median may be incorrect. You do not take a 50-year-old retired batter in the cricket team because his average career score was more than 45. What he will score in the future is what matters and not what he scored in the past.

# Zero capex – do such companies exist?

Companies usually require continuous reinvestment to sustain the business and fund the growth. There is a category of companies which can keep growing with little incremental investments into assets. Companies in industries like fast-moving consumer goods, or information technology are often categorised as companies which require little capex. If companies have little reinvestment needs and they distribute most of their earnings, they often report high ROEs. Looking at such companies on an ROE basis does not make sense. Traditional DCF is often a better approach in such cases.

But is it true that they do not require any capex at all? Let me take a hypothetical example of a consumer goods company. The major investment for the company is the investment it makes into its brands. The advertisement costs are a proxy for what the company invests to build a brand. However, the advertisement costs are fully expensed out during the year even though the spending in the current year is the future profit driver.

So, the zero-capex factor arises not because the company is not investing in assets but because the accounting policy requires the companies to write off the expenditure incurred in the same fiscal year leading to little addition to the fixed assets. Imagine a world where the advertisement expenses are also considered a capex. Let me give a simple illustration of a company under the current scenario and an alternate scenario. I am making the following assumptions:

a) Raw material to sales ratio of 42%
b) Advertisement spends at 16% of sales
c) Other expenses at 17% of sales
d) Leading to an OPM of 25%
e) No interest costs, other income, or depreciation
f) Tax rate of 25%
g) Beginning assets and shareholder funds at 100 and beginning sales at 100 with a growth in sales of 10% per annum

In the current scenario where the entire advertisement spending must be expensed out, the situation will be like this:

| | Year 0 | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 | Total |
|---|---|---|---|---|---|---|---|
| Sales | | 100 | 110 | 121 | 133.1 | 146.41 | 610.51 |
| Raw Materials | | 42 | 46.2 | 50.82 | 55.9 | 61.49 | 256.41 |
| Advertisement | | 16 | 17.6 | 19.36 | 21.3 | 23.43 | 97.68 |
| Other expenses | | 17 | 18.7 | 20.57 | 22.63 | 24.89 | 103.79 |
| Operating Profit | | 25 | 27.5 | 30.25 | 33.28 | 36.6 | 152.63 |
| Depreciation | | - | - | - | - | - | - |
| Interest | | - | - | - | - | - | - |
| PBT | | 25 | 27.5 | 30.25 | 33.28 | 36.6 | 152.63 |
| Tax | | 6.25 | 6.88 | 7.56 | 8.32 | 9.15 | 38.16 |
| PAT | | 18.75 | 20.63 | 22.69 | 24.96 | 27.45 | 114.47 |
| PAT Growth % | | | 10% | 10% | 10% | 10% | |
| Dividend | | 18.75 | 20.63 | 22.69 | 24.96 | 27.45 | |
| | | | | | | | |
| Net worth | 100 | 100 | 100 | 100 | 100 | 100 | |
| | | | | | | | |
| Assets | 100 | 100 | 100 | 100 | 100 | 100 | |
| | | | | | | | |
| Cash Flow | | 18.75 | 20.63 | 22.69 | 24.96 | 27.45 | 114.47 |

In the alternate scenario where the entire advertisement cost is capitalised, the situation will be like this:

| | Year 0 | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 | Total |
|---|---|---|---|---|---|---|---|
| Sales | | 100 | 110 | 121 | 133.1 | 146.41 | 610.51 |
| Raw Materials | | 42 | 46.2 | 50.82 | 55.9 | 61.49 | 256.41 |
| Advertisement | | - | - | - | - | - | - |
| Other expenses | | 17 | 18.7 | 20.57 | 22.63 | 24.89 | 103.79 |
| Operating Profit | | 41 | 45.1 | 49.61 | 54.57 | 60.03 | 250.31 |
| Depreciation | | - | - | - | - | - | - |
| Interest | | - | - | - | - | - | - |
| PBT | | 41 | 45.1 | 49.61 | 54.57 | 60.03 | 250.31 |
| Tax | | 10.25 | 11.28 | 12.4 | 13.64 | 15.01 | 62.58 |
| PAT | | 30.75 | 33.83 | 37.21 | 40.93 | 45.02 | 187.73 |
| PAT Growth % | | | 10% | 10% | 10% | 10% | |
| Dividend | | 14.75 | 16.23 | 17.85 | 19.63 | 21.6 | |
| | | | | | | | |
| Net worth | 100 | 116 | 133.6 | 152.96 | 174.26 | 197.68 | |
| | | | | | | | |
| Assets | 100 | 116 | 133.6 | 152.96 | 174.26 | 197.68 | |
| | | | | | | | |
| CF | | 14.75 | 16.23 | 17.85 | 19.63 | 21.6 | 90.05 |

We can see that the income statement in the alternate scenario presents a different picture. The second scenario is closer to a typical manufacturing company characterised by regular capex, which drives future growth. But the cash flow picture remains the same, with the difference being due to taxes. An analogous situation arises in the case of many technology companies where the company's value is primarily due to the intangible assets it possesses.

So, when we analyse such companies, we need not worry about the

ROE as, in many cases, the operating ROE will be an extremely high number. If there is nothing amiss in the movement of working capital, we can take the PAT as a proxy to cash flow and calculate the value using the equation:

$$\frac{PAT}{(r-g)}$$

If the company distributes most of the PAT as dividends, we can examine whether the required rate of return needs adjustment, as was discussed in the earlier chapter on dividends. Here is an example of a company in the IT products space that is probably amenable to this approach.

| | FY16 | FY17 | FY18 | FY19 | FY20 | FY21 | CAGR |
|---|---|---|---|---|---|---|---|
| Sales | 4,131 | 4,427 | 4,527 | 4,959 | 4,861 | 4,984 | 4% |
| Expenses | 2,520 | 2,693 | 2,716 | 2,814 | 2,633 | 2,515 | |
| Operating Profit | 1,612 | 1,734 | 1,811 | 2,145 | 2,229 | 2,469 | 9% |
| OPM % | 39% | 39% | 40% | 43% | 46% | 50% | |
| Other Income | 189 | 93 | 91 | 176 | 177 | 132 | |
| Interest | 0 | 0 | 0 | 0 | 47 | 19 | |
| Depreciation | 53 | 70 | 61 | 54 | 106 | 104 | |
| Profit before tax | 1,748 | 1,757 | 1,840 | 2,267 | 2,252 | 2,477 | 7% |
| Tax % | 40% | 33% | 33% | 39% | 35% | 29% | |
| Net Profit | 1,049 | 1,185 | 1,237 | 1,386 | 1,462 | 1,762 | 11% |

If you assume that the company's past growth in profit is due to margin expansion and the margins have peaked out, you may assume that the company will, at best, deliver an earnings growth in line with sales growth. If we assume the future sales growth to be also around 4%, the value of the company at g=4% and r=12% will be 1762/(0.12-0.04) = 22,025 Cr. On the other hand, if you feel that the company will continue to deliver at least 8% growth in earnings in the future, the company's value will be about 44,050 Cr. As I keep repeating, the valuation framework is just a tool to crystallise your thoughts and assessments into numbers. What happens if the growth rate assumption is more than the required rate of return? We need to use multistage models. We discuss the treatment of high growth in the coming chapters.

# Adjusting the valuation model for growth

In the earlier chapters, we discussed the model to estimate the fair price to book value as follows:

$$PBV = \frac{(ROE - g)}{(r - g)}$$

One of the assumptions that went in while deriving this formula was:

$$\frac{(1 + g)}{(1 + r)} < 1$$

This assumption implied that the sustainable growth rate must be less than the required rate of return (g < r). In a high growth economy like India, many companies grow much faster than the rate we have assumed as required rate of return. Many companies can sustain the growth rate above the required rate of return for quite some time. However, in the model that we have used, the mathematics does not allow us to use a growth assumption more than the required rate of return.

The NIFTY 50 index, as I am preparing this chapter, has a PE ratio is 23.43 and a PBV of 4.25. The website www.nseindia.com has a section that gives the historical P/E, P/B, and a dividend yield of the NIFTY daily, and this is something I have found very useful, as the P/E and P/B ratio can be used to estimate the ROE of the index. We know that ROE is PAT/Book Value. So, PBV/PE should be equal to ROE. Based on the above values for NIFTY, the ROE on this date is 4.25/23.43 ≈18%. Let us plug this into the PBV framework:

4.25 = (0.18-g)/(0.12-g) which leads to g of about 10.2%. The calculated 'g' will often be closer to the nominal GDP growth. We can argue that we can use this approach to arrive at the g assumption for stocks based on whether you expect the company's earnings growth to be faster or slower than the market.

However, I am not comfortable using the PBV model with g higher than 8% as the value increases exponentially as g approaches r. You may take it as a personal bias, but I find this approach more conservative. I prefer errors of omission rather than errors of

commission. You may tweak the model the way you want based on the extent of aggression you are willing to assume. I prefer splitting the growth into two parts – the first n years of supernormal growth rate, followed by growth at a mature rate until perpetuity.

Once this is done, we can use two approaches:

a) Insert your growth assumptions into the model to estimate the fair PBV multiple.

b) Keep the growth as an unknown variable and solve for it by plugging in the current PBV implied by the market price into the equation.

We will discuss this aspect later. Let us first see how we can tweak the model.

We come back to the constant growth dividend discount model. I split it into the initial growth phase, which lasts for n years and the remaining mature phase from year $n+1$ onwards till perpetuity.

**Price is given by**

$$\frac{D_0 \times (1+g)}{(1+r)} + \frac{D_0 \times (1+g)^2}{(1+r)^2} + \frac{D_0 \times (1+g)^3}{(1+r)^3} + \dots + \frac{D_0 \times (1+g)^n}{(1+r)^n}$$

$$+ \frac{D_0 \times (1+g)^n}{(1+r)^n}\left\{\left(\frac{1+g'}{1+r}\right) + \left(\frac{1+g'}{1+r}\right)^2 + \dots\right\}$$

$$P = D_0 \times (1+g)\left\{\frac{\left(\frac{1+g}{1+r}\right)^n - 1}{(g-r)}\right\} + \frac{D_0 \times (1+g)^n}{(1+r)^n}\left\{\frac{(1+g')}{(r-g')}\right\}$$

$$PBV = \frac{(ROE-g)}{(g-r)}\left\{\left(\frac{1+g}{1+r}\right)^n - 1\right\} + \frac{(ROE'-g') \times (1+g')}{(r-g')} \times \left(\frac{1+g}{1+r}\right)^n$$

I have introduced a few more variables here. ROE and g represent the return on equity and earnings growth during the growth phase lasting for n years. I use ROE' and g' as variables to represent the return on equity and growth rate during the mature stage.

You are free to use more than two stages also if you want to model the growth as a high growth phase for the initial years and taper it down with time before it fades into the mature growth phase.

If you look at the expression, we see two terms. The second term is similar to the mature PBV model we discussed earlier. However, a factor has been added to it:

$$\left(\frac{1+g}{1+r}\right)^n \times (1+g')$$

Let us call this the growth multiplier.

In practice, most of the value of the PBV multiplier comes from the second term. So, one conservative way of using the revised model is to

ignore the first term, which makes life easier as it helps us get a closed-ended solution for g.

If I call the first term A and the second term B, then the contribution of A and B to the total PBV for some cases is given in the following table:

| n | 5 | 10 | 15 | 5 | 10 | 15 |
|---|---|---|---|---|---|---|
| ROE | 20% | 20% | 20% | 30% | 30% | 30% |
| ROE' | 20% | 20% | 20% | 30% | 30% | 30% |
| g | 15% | 15% | 15% | 20% | 20% | 20% |
| g' | 8% | 8% | 8% | 8% | 8% | 8% |
| r | 12% | 12% | 12% | 12% | 12% | 12% |
| | | | | | | |
| A | 0.24 | 0.5 | 0.81 | 0.51 | 1.24 | 2.27 |
| B | 3.7 | 4.22 | 4.82 | 8.39 | 11.84 | 16.72 |
| A+B | 3.93 | 4.72 | 5.63 | 8.9 | 13.08 | 18.99 |
| | | | | | | |
| A% | 6% | 11% | 14% | 6% | 9% | 12% |
| B% | 94% | 89% | 86% | 94% | 91% | 88% |

So, when you ignore the first term, you are only introducing an additional margin of safety,  as you know that the estimated fair PBV using the second term alone is about 5-15% lesser than the actual fair PBV.

As I mentioned earlier, you can use the framework in two ways. If you explicitly arrive at the fair value using your growth assumptions, you can insert the numbers into the model and arrive at the PBV multiplier. The other option was using the current market price implied PBV to arrive at the earnings growth implied by the market and see if the market-implied growth rate is reasonable. For the price implied growth approach, you may consider using the modified form of the valuation framework where we take only the second term of the equation. This approach makes the calculations easier while simultaneously making the estimate more conservative.

Another important aspect here is that you need to consider the combinations of g and n to arrive at the implied growth before reaching the maturity phase. Again, it is up to you. Maybe you want a 5-year projection period only which means n=5 and check the reasonableness of the growth implied over the next 5 years. If you feel that the business and growth rate have more sustainability, you may use a higher value of n. As the value of n increases, the value of g starts trending down, which does not mean things are getting easier. This means that the company's earnings growth CAGR  should sustain

over longer periods. It is always tougher to sustain high earnings growth over longer periods. The longer the period you assume, the more is the uncertainty.

Ignoring the first term of the valuation model also helps to estimate the growth for different periods quickly. The equation:

$$PBV = \frac{(ROE' - g')}{(r - g')} \times (1 + g') \times \left(\frac{1+g}{1+r}\right)^n$$

Can be rearranged as

$$g = \left\{PBV \times \frac{(r - g')}{(ROE' - g')} \times \frac{(1+r)^n}{(1+g')}\right\}^{1/n} - 1$$

This helps us to calculate the market-implied growth rate at a given price.

For example, if you feel that the following assumptions suit a company:

$r = 12\%$
$n = 10 \ years$
$g' = 8\%$
$ROE' = 25\%$
$PBV = 5$

$$g = \left(5 \times \frac{(12\% - 8\%)}{(25\% - 8\%)} \times \frac{(1 + 12\%)^{10}}{(1 + 8\%)}\right)^{\frac{1}{10}} - 1$$
$$g \approx 13\%$$

This means the market-implied growth is about 13% for 10 years before it tapers to 8%, and the 8% growth rate continues till perpetuity. If the PBV is 8x then it means $g = 18\%$. So, if everything else remains the same, when the market anticipates a higher growth, the PBV ascribed by the market will increase.

Now you see the advantage of not using the first term of the modified valuation model. You can now calculate the market expectation during the growth phase in real-time as we have a closed-form equation for estimating the growth.

The market-implied expectation can also be applied to discounted cash flow models. This has been explained at length in the fantastic book *Expectations Investing* by Rappaport and Mauboussin. In the approach I have highlighted in this chapter, I am extending the argument of using market-implied growth expectations in another way especially when companies are not easily amenable to the DCF approach.

Once you have an idea about the market-implied growth expectation, then you can see whether the market's assumption is reasonable or not compared to what you have assumed based on your fundamental analysis.

Buying and holding a good growth stock is probably one of the most effective investment strategies that lead to phenomenal returns with an effort level at a fraction of most other strategies. When growth is expected to sustain over the long term, then you may get good entry opportunities even at seemingly high entry valuations. For example, between 2011 and 2021, NIFTY increased from 5834 to 14,691. This implied a CAGR of 9.6% over the period. A leading paint company with a history of generating phenomenal returns for the investors was available at a market capitalization of 2,43,320 Cr as of 31st March 2021. Let us, for a moment, assume that the company is perfectly valued as on that date. If you wanted only slightly more than the market return over the period, say 10%, you would have been happy to buy the stock at a market capitalisation of 93,810 Cr as of 31st March 2011. The company reported a PAT of 841 Cr in 2011 and had a consolidated net worth of 2,187 Cr. This would have meant that an entry-level PBV of 43x and P/E of 111x would still have generated market-beating returns. Of course, the assumption here is that the stock is perfectly valued as of 31st March 2021 with a P/E of 78x and PBV of 19x. The stock was available at 28x P/E and 11x PBV as of 31st March 2011 and has been a 10 bagger since then.

Conventional value investors would still find it difficult to pay 28x earnings and 11x book value for a stock today as these numbers are high. The market has witnessed many such stocks that generated phenomenal returns for investors. In the paint company's case, though the earnings grew by less than 4x during the period, this stock has been a 10-bagger. Seeing success stories like these, some popular fund managers have gone on record and made statements that the P/E ratio does not matter.

The valuation multiples that can be paid increase tremendously if a company can sustain a good growth with high ROE for a prolonged period. Terry Smith is a fund manager known for picking superior quality growth stocks and willing to pay for quality. He performed an analysis of 25 superior quality compounding companies over the period 1973 to 2021 and concluded that you could have paid 281 times earnings for L'Oréal, 156 times earnings for Colgate and 147 times for Brown Forman and still beat the market. He writes, "*Provided you have the patience, these quality stocks do tend to produce the sort of performance over long periods that makes their valuation fade into insignificance.*"

Benjamin Graham said that good investing is all about buying a stock below its intrinsic value. Growth is a major component of value. If you feel you are good at predicting growth, then that is an alternate way of identifying a sound investment opportunity. Every P/E ratio is just an indication of the market expectations built into the stock price. If you expect that the stock will grow faster than the market-implied expectations and the company delivers growth according to your expectations, you generate good returns. But be mindful, that the higher the P/E, the more is the earnings growth expectation built into the price. The more the expectation on future performance, the more is the risk of not meeting the expectation, and the higher is the risk of the stock price undergoing a correction.

Let us now look at how we can apply the model in a real-life scenario.

I am presenting the financial snapshot of an electrical goods company that has grown well. The sales CAGR over 7 years has been 11%, the operating profit CAGR has been 18%, and PAT CAGR has been 32%.

| | FY15 | FY16 | FY17 | FY18 | FY19 | FY20 | FY21 | CAGR |
|---|---|---|---|---|---|---|---|---|
| Net Sales | 4,707 | 5,202 | 5,500 | 6,770 | 7,986 | 8,830 | 8,927 | 11% |
| Op. profit | 442 | 492 | 480 | 729 | 950 | 1,129 | 1,167 | 18% |
| OPM % | 9.40% | 9.50% | 8.70% | 10.80% | 11.90% | 12.80% | 13.10% | |
| PAT | 164 | 185 | 233 | 358 | 500 | 759 | 882 | 32% |
| PAT Margin % | 3.50% | 3.60% | 4.20% | 5.30% | 6.30% | 8.60% | 9.90% | |
| Net Fixed Assets | 822 | 985 | 1,128 | 1,197 | 1,276 | 1,422 | 1,870 | |
| Net worth | 1630 | 1783 | 1994 | 2347 | 2847 | 3837 | 4754 | 20% |
| ROE | | 11% | 13% | 18% | 21% | 27% | 23% | |

The operating margins are gradually improving, and ROE in FY21 has been 23%. The company is adding fixed assets to support growth. I will also add that the dividends are not much. The payout is low as the company reinvests earnings to fund future growth.

At the time of preparing this chapter, the company has an MCAP of about 35,000 Cr. On a net worth of 4,754 Cr, the PBV is about 7.4x.

It is evident that the company's value is way above that implied by the mature growth model. The recent history indicates that the company is on a growth path, and the growth can be above the required rate of return for quite some time. Let us now see the growth expectation built into the stock price.

Using the equation

$$g = \left\{ PBV \times \frac{(r - g')}{(ROE' - g')} \times \frac{(1 + r)^n}{(1 + g')} \right\}^{1/n} - 1$$

we can calculate the value of g for various values of n to find the market-implied expectations over different periods before it converges to the mature growth phase. We will retain the mature growth phase expectation as 8%, ROE at 23% and r at 12%.

We can calculate the supernormal growth against the number of years, and we get the following table.

| n (years) | Growth |
|---|---|
| 1 | 104.60% |
| 2 | 51.40% |
| 3 | 36.90% |
| 4 | 30.20% |
| 5 | 26.30% |
| 6 | 23.80% |
| 7 | 22.10% |
| 8 | 20.80% |
| 9 | 19.80% |
| 10 | 19.00% |

When we plot the g versus n graph, we get the following chart:



Implied growth v/s projection period
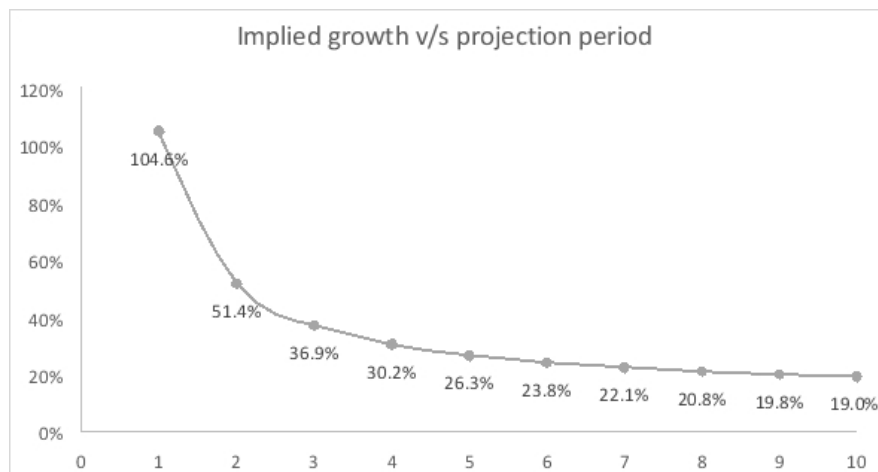
The ten-year implied growth expectation is around 19%. Incidentally, the company's operating profit growth over the last 7-year period has been about 18%. So, the seemingly high PBV of 7+ may still not be high if the company continues to deliver results at the same rate that

it has done in the past.

The next step is to challenge the market expectation of growth. If the sales continue to grow at the same CAGR of 11%, the sales at the end of 10 years will be 25,350 Cr. Assuming a 2% improvement in OPM during the period, due to benefits of scale, the margin can be about 15%, and operating profit can be about 3,800 Cr. This implies an operating profit CAGR of 14% over the next ten years. If 95% of operating profit becomes PBT (91% currently), the PBT and PAT CAGR will be about 14.3%. Since the market-implied expectation is about 19%, if we have the above set of expectations, the current price probably is high.

Let us now make more aggressive assumptions. Our goal is to understand the market-implied expectation. The economy went through a bad patch in the period FY19-FY21 due to the COVID-19 pandemic. Before that, the company was growing sales at a CAGR of 14%. If the 14% CAGR happens over the next 10 years, the sales at the end of 10 years can be 33,100 Cr. Assuming that the OPM improves to 15%, the operating profit will be 4,965 Cr, leading to a CAGR of 17.4%. PBT could be about 4,700 Cr implying a CAGR of 18%. We can assume that the PAT CAGR will also be around 18%. With this set of assumptions, we come closer to the market value.

Remember that we are also making a critical assumption that ROE during these 10 years remains at 23%. Sustaining the ROE is also as important as sustaining the earnings growth.

Once you arrive at what the company needs to achieve to make sense of the valuation, the next step is to do some diagnostic tests. Some tests that I have found quite useful are

a) Out of the 6000 odd companies listed in BSE how many have generated a 19% CAGR in earnings growth over ten years.

b) See how many companies generate the operating profit that the company is expected to make after 10 years. See if the company you are analysing can indeed become similar to the companies in this list

Such statistics become very handy when we are trying to estimate the probability of a company pulling off the growth expectations implied at a price. The current price seems to imply an earnings growth in line with the past earnings growth. But will the company be able to deliver this on an increasing base? These are some of the questions that you need to answer based on your understanding of the company and the industry in which the company is operating. Even if these expectations are met, you will just about get the required rate of return. There is no margin of safety here, and good returns will not be generated unless

the company comprehensively beats these expectations.

So, when we apply the modified valuation framework adjusting for growth, we end up with an implied growth versus time chart like this:
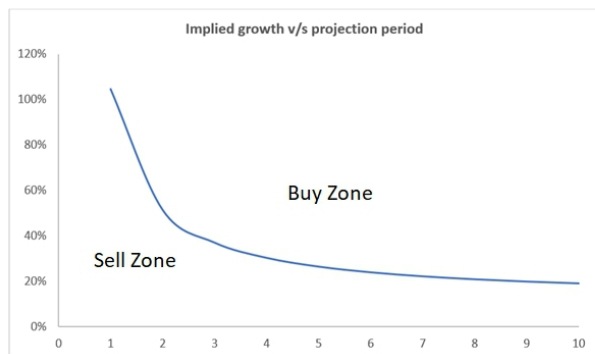


If your expectation is in the region below the graph it implies that the stock is overpriced, and if the expectation is above the market-implied expectation chart, then it is probably in the underpriced zone.

If you expect secular growth over a long timeframe, it is better to consider a block of 5-years or 10-years. If the latest earnings are low and you expect a substantial jump in earnings shortly, it is better to model these years explicitly and then go to the secular growth phase followed by the mature growth phase.

Growth is a key driver of a company's value. Higher the growth with a good ROE, higher the value. Investors who get the growth expectation right often make outsized returns as the market rewards growth.

Calculating the market-implied growth is a little cumbersome exercise. Having a cheat sheet with the implied growth computed for various combinations of ROE and PBV will be quite helpful. You can construct the sheet in any spreadsheet software like Microsoft Excel. I am providing you with two such sheets with $r=12\%$; $g'=8\%$, and $n=5$ and $n=10$ years.

| | Market Implied Super-Normal Growth for r=12%, g'=8% and n=5 years. | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | ROE | | | | | | | | | | | | | |
| PBV | 13% | 15% | 17% | 19% | 21% | 23% | 25% | 27% | 29% | 31% | 33% | 35% | 37% | 39% |
| 1.2 | 9% | | | | | | | | | | | | | |
| 1.4 | 13% | | | | | | | | | | | | | |
| 1.6 | 16% | | | | | | | | | | | | | |
| 1.8 | 19% | 11% | | | | | | | | | | | | |
| 2 | 21% | 13% | | | | | | | | | | | | |
| 2.2 | 23% | 15% | 10% | | | | | | | | | | | |
| 2.4 | 26% | 17% | 12% | | | | | | | | | | | |
| 2.6 | 28% | 19% | 14% | 9% | | | | | | | | | | |
| 2.8 | 30% | 21% | 15% | 11% | | | | | | | | | | |
| 3 | 31% | 23% | 17% | 12% | 9% | | | | | | | | | |
| 3.2 | 33% | 24% | 18% | 14% | 10% | | | | | | | | | |
| 3.4 | 35% | 26% | 20% | 15% | 11% | | | | | | | | | |
| 3.6 | 36% | 27% | 21% | 16% | 13% | 9% | | | | | | | | |
| 3.8 | 38% | 29% | 22% | 18% | 14% | 11% | | | | | | | | |
| 4 | 39% | 30% | 24% | 19% | 15% | 12% | 9% | | | | | | | |
| 4.2 | 41% | 31% | 25% | 20% | 16% | 13% | 10% | | | | | | | |
| 4.4 | 42% | 33% | 26% | 21% | 17% | 14% | 11% | 9% | | | | | | |
| 4.6 | 43% | 34% | 27% | 22% | 18% | 15% | 12% | 10% | | | | | | |
| 4.8 | 44% | 35% | 28% | 23% | 19% | 16% | 13% | 11% | | | | | | |
| 5 | 46% | 36% | 29% | 24% | 20% | 17% | 14% | 11% | 9% | | | | | |
| 5.2 | 47% | 37% | 30% | 25% | 21% | 18% | 15% | 12% | 10% | | | | | |
| 5.4 | 48% | 38% | 31% | 26% | 22% | 19% | 16% | 13% | 11% | 9% | | | | |
| 5.6 | 49% | 39% | 32% | 27% | 23% | 19% | 17% | 14% | 12% | 10% | | | | |
| 5.8 | 50% | 40% | 33% | 28% | 24% | 20% | 17% | 15% | 13% | 10% | 9% | | | |
| 6 | 51% | 41% | 34% | 29% | 25% | 21% | 18% | 16% | 13% | 11% | 9% | | | |
| 6.2 | 52% | 42% | 35% | 30% | 25% | 22% | 19% | 16% | 14% | 12% | 10% | | | |
| 6.4 | 53% | 43% | 36% | 31% | 26% | 23% | 20% | 17% | 15% | 13% | 11% | 9% | | |
| 6.6 | 54% | 44% | 37% | 31% | 27% | 23% | 20% | 18% | 15% | 13% | 11% | 10% | | |
| 6.8 | 55% | 45% | 38% | 32% | 28% | 24% | 21% | 18% | 16% | 14% | 12% | 10% | 9% | |
| 7 | 56% | 46% | 38% | 33% | 29% | 25% | 22% | 19% | 17% | 15% | 13% | 11% | 10% | |
| 7.2 | 57% | 46% | 39% | 34% | 29% | 26% | 23% | 20% | 17% | 15% | 13% | 12% | 10% | 9% |
| 7.4 | 57% | 47% | 40% | 34% | 30% | 26% | 23% | 21% | 18% | 16% | 14% | 12% | 11% | 9% |
| 7.6 | 58% | 48% | 41% | 35% | 31% | 27% | 24% | 21% | 19% | 17% | 15% | 13% | 11% | 10% |
| 7.8 | 59% | 49% | 41% | 36% | 31% | 28% | 25% | 22% | 19% | 17% | 15% | 14% | 12% | 10% |
| 8 | 60% | 49% | 42% | 37% | 32% | 28% | 25% | 22% | 20% | 18% | 16% | 14% | 12% | 11% |
| 8.2 | 61% | 50% | 43% | 37% | 33% | 29% | 26% | 23% | 21% | 18% | 16% | 15% | 13% | 12% |
| 8.4 | 61% | 51% | 44% | 38% | 33% | 30% | 26% | 24% | 21% | 19% | 17% | 15% | 14% | 12% |
| 8.6 | 62% | 52% | 44% | 39% | 34% | 30% | 27% | 24% | 22% | 20% | 18% | 16% | 14% | 13% |
| 8.8 | 63% | 52% | 45% | 39% | 35% | 31% | 28% | 25% | 22% | 20% | 18% | 16% | 15% | 13% |
| 9 | 64% | 53% | 46% | 40% | 35% | 31% | 28% | 25% | 23% | 21% | 19% | 17% | 15% | 14% |
| 9.2 | 64% | 54% | 46% | 40% | 36% | 32% | 29% | 26% | 23% | 21% | 19% | 17% | 16% | 14% |
| 9.4 | 65% | 54% | 47% | 41% | 36% | 33% | 29% | 26% | 24% | 22% | 20% | 18% | 16% | 15% |
| 9.6 | 66% | 55% | 47% | 42% | 37% | 33% | 30% | 27% | 24% | 22% | 20% | 18% | 17% | 15% |
| 9.8 | 66% | 56% | 48% | 42% | 38% | 34% | 30% | 27% | 25% | 23% | 21% | 19% | 17% | 16% |

| | Market Implied Super-Normal Growth for r=12%, g'=8% and n=10 years. | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | ROE | | | | | | | | | | | | | |
| PBV | 13% | 15% | 17% | 19% | 21% | 23% | 25% | 27% | 29% | 31% | 33% | 35% | 37% | 39% |
| 1.2 | 11% | | | | | | | | | | | | | |
| 1.4 | 12% | 9% | | | | | | | | | | | | |
| 1.6 | 14% | 10% | | | | | | | | | | | | |
| 1.8 | 15% | 11% | 9% | | | | | | | | | | | |
| 2 | 16% | 13% | 10% | | | | | | | | | | | |
| 2.2 | 18% | 14% | 11% | 9% | | | | | | | | | | |
| 2.4 | 19% | 15% | 12% | 10% | | | | | | | | | | |
| 2.6 | 20% | 16% | 13% | 11% | 9% | | | | | | | | | |
| 2.8 | 20% | 16% | 14% | 11% | 9% | | | | | | | | | |
| 3 | 21% | 17% | 14% | 12% | 10% | 9% | | | | | | | | |
| 3.2 | 22% | 18% | 15% | 13% | 11% | 9% | | | | | | | | |
| 3.4 | 23% | 19% | 16% | 14% | 12% | 10% | 9% | | | | | | | |
| 3.6 | 24% | 19% | 16% | 14% | 12% | 11% | 9% | | | | | | | |
| 3.8 | 24% | 20% | 17% | 15% | 13% | 11% | 10% | 9% | | | | | | |
| 4 | 25% | 21% | 18% | 15% | 13% | 12% | 10% | 9% | | | | | | |
| 4.2 | 25% | 21% | 18% | 16% | 14% | 12% | 11% | 10% | 9% | | | | | |
| 4.4 | 26% | 22% | 19% | 16% | 15% | 13% | 12% | 10% | 9% | | | | | |
| 4.6 | 27% | 22% | 19% | 17% | 15% | 13% | 12% | 11% | 10% | 9% | | | | |
| 4.8 | 27% | 23% | 20% | 18% | 16% | 14% | 13% | 11% | 10% | 9% | | | | |
| 5 | 28% | 23% | 20% | 18% | 16% | 14% | 13% | 12% | 11% | 10% | 9% | | | |
| 5.2 | 28% | 24% | 21% | 18% | 16% | 15% | 13% | 12% | 11% | 10% | 9% | | | |
| 5.4 | 29% | 24% | 21% | 19% | 17% | 15% | 14% | 13% | 11% | 10% | 10% | 9% | | |
| 5.6 | 29% | 25% | 22% | 19% | 17% | 16% | 14% | 13% | 12% | 11% | 10% | 9% | | |
| 5.8 | 30% | 25% | 22% | 20% | 18% | 16% | 15% | 13% | 12% | 11% | 10% | 9% | 9% | |
| 6 | 30% | 26% | 23% | 20% | 18% | 16% | 15% | 14% | 13% | 12% | 11% | 10% | 9% | |
| 6.2 | 30% | 26% | 23% | 21% | 19% | 17% | 15% | 14% | 13% | 12% | 11% | 10% | 9% | 9% |
| 6.4 | 31% | 27% | 23% | 21% | 19% | 17% | 16% | 15% | 13% | 12% | 11% | 11% | 10% | 9% |
| 6.6 | 31% | 27% | 24% | 21% | 19% | 18% | 16% | 15% | 14% | 13% | 12% | 11% | 10% | 9% |
| 6.8 | 32% | 27% | 24% | 22% | 20% | 18% | 16% | 15% | 14% | 13% | 12% | 11% | 10% | 10% |
| 7 | 32% | 28% | 24% | 22% | 20% | 18% | 17% | 16% | 14% | 13% | 12% | 12% | 11% | 10% |
| 7.2 | 32% | 28% | 25% | 22% | 20% | 19% | 17% | 16% | 15% | 14% | 13% | 12% | 11% | 10% |
| 7.4 | 33% | 28% | 25% | 23% | 21% | 19% | 17% | 16% | 15% | 14% | 13% | 12% | 11% | 11% |
| 7.6 | 33% | 29% | 26% | 23% | 21% | 19% | 18% | 16% | 15% | 14% | 13% | 12% | 12% | 11% |
| 7.8 | 33% | 29% | 26% | 23% | 21% | 20% | 18% | 17% | 16% | 15% | 14% | 13% | 12% | 11% |
| 8 | 34% | 29% | 26% | 24% | 22% | 20% | 18% | 17% | 16% | 15% | 14% | 13% | 12% | 11% |
| 8.2 | 34% | 30% | 26% | 24% | 22% | 20% | 19% | 17% | 16% | 15% | 14% | 13% | 13% | 12% |
| 8.4 | 34% | 30% | 27% | 24% | 22% | 20% | 19% | 18% | 16% | 15% | 14% | 14% | 13% | 12% |
| 8.6 | 35% | 30% | 27% | 25% | 23% | 21% | 19% | 18% | 17% | 16% | 15% | 14% | 13% | 12% |
| 8.8 | 35% | 31% | 27% | 25% | 23% | 21% | 20% | 18% | 17% | 16% | 15% | 14% | 13% | 13% |
| 9 | 35% | 31% | 28% | 25% | 23% | 21% | 20% | 18% | 17% | 16% | 15% | 14% | 14% | 13% |
| 9.2 | 36% | 31% | 28% | 25% | 23% | 22% | 20% | 19% | 18% | 16% | 16% | 15% | 14% | 13% |
| 9.4 | 36% | 31% | 28% | 26% | 24% | 22% | 20% | 19% | 18% | 17% | 16% | 15% | 14% | 13% |
| 9.6 | 36% | 32% | 28% | 26% | 24% | 22% | 21% | 19% | 18% | 17% | 16% | 15% | 14% | 14% |
| 9.8 | 37% | 32% | 29% | 26% | 24% | 22% | 21% | 19% | 18% | 17% | 16% | 15% | 15% | 14% |

# The evolution of a growth stock – A case study

In the last chapter, we concluded that growth is a critical component of a company's value. If the company has a good ROE, the higher the growth, the higher the value. We also discussed how to construct the implied growth versus projection period chart to compare your expectations with that ascribed by the market.

In this chapter, I will present a case study to explain how the market rewards high growth companies. This is a case study that I am writing with a hindsight bias. However, as you will find out soon, the case study is not written to display exceptional stock-picking capability but to demonstrate how difficult it is to make a forecast.

The table presents a snapshot of a home products company that has grown well and is reinvesting for growth. I present the data for the period from FY15 to FY20 and will demonstrate how the story unfolded after FY20.

|                  | FY15 | FY16   | FY17  | FY18   | FY19   | FY20   | CAGR |
|------------------|------|--------|-------|--------|--------|--------|------|
| Net Sales        | 127  | 174    | 181   | 196    | 252    | 276    | 17%  |
| Op. profit       | 24   | 31     | 27    | 27     | 42     | 48     | 15%  |
| OPM %            | 19%  | 18%    | 15%   | 14%    | 17%    | 17%    |      |
| PBT              | 13   | 18     | 13    | 17     | 24     | 30     | 18%  |
| PAT              | 9    | 11     | 7     | 12     | 17     | 22     | 20%  |
| Net Fixed Assets | 58   | 67     | 98    | 111    | 119    | 125    | 17%  |
| Net worth        | 42   | 79     | 112   | 118    | 123    | 157    |      |
| ROE              |      | 26.20% | 8.90% | 10.70% | 14.40% | 17.90% |      |
| MCAP             | 288  | 269    | 282   | 251    | 254    | 149    |      |

The sales CAGR was healthy at 17%. The OPM was reasonably stable. The PAT CAGR was also healthy at about 20%. However, the jump in fixed assets and time for capacity utilization to increase led to a dip in ROE, even though the top line was growing at a healthy pace. Interestingly the market capitalization remained almost flat for almost five years before the COVID-19 driven market correction led the market capitalization to an even lower level where the company was quoting at a discount to book value. The geometric mean of the ROE

over the period was about 15.5%.

Let me come to the easiest part. Imagine yourself in FY20. What is your assessment of the stock? The mean ROE of 15.5% would imply that the stock is worth more than its book value as our required rate of return is 12%. Let us apply the PBV framework with an assumption of zero growth. This gives a PBV multiplier of 0.155/0.12 = 1.29x. So, the fair market value will be 1.29x157 = 202 Cr. This clearly shows that the stock is probably building in too much pessimism and is probably presenting a good entry point. The tricky part is how much is the upside. Are you satisfied with the fair market value estimate of 202 Cr.? An expected return of 35% is not bad at all!!! But is it right to ignore the growth altogether?

We can see that the company is growing at a healthy pace. If we use the mature growth model with g=8%, we get the PBV as (0.155-0.08)/ (0.12-0.08) = 1.875x implying a fair market value of 294 Cr. This helps us conclude that the company has the potential upside of 35.5% (149→ 202) on a conservative zero growth model and 97% (149 → 294) on a mature growth model.

But the company has been growing its operating profit at a rate of 15%. What will be the situation if the company is expected to grow at 15% for another five years and then revert to mature growth?

We know that the valuation framework with the growth factor is

$$PBV = \frac{(ROE' - g')}{(r - g')} \times$$

$$(1 + g') \times \left(\frac{1+g}{1+r}\right)^n$$

With g=15% and n=5 years, the growth multiplier on the mature growth model is given by:

$$1.08 \times \left(\frac{1.15}{1.12}\right)^5 = 1.23$$

So, the PBV multiplier becomes the mature growth model multiplier of 1.875 multiplied by the growth factor of 1.23x, which works out to about 2.31x. This leads to the fair market value estimate increasing to 2.31x157 = 363 Cr. So, the upside with supernormal growth will be about 244% (363/149).

What about ROE? We have assumed the sustainable ROE as the geometric mean ROE of 15.5%. The ROE is witnessing an increasing trend, and the latest ROE is about 18%. It was as high as 26% before the capex phase began. Let us see what happens with the sustainable

ROE assumption at 18% and retaining other assumptions like 15% growth over five years. In this case, the growth multiplier of 1.23x remains the same. But the mature growth multiplier of 1.875 now increases to (0.18-0.08)/ (0.12-0.08) = 2.5x. Hence, the overall PBV that we can use becomes 2.5x1.23 = 3.075x. The fair market value estimate now increases to 2.5x1.23x157 = 483 Cr, implying an upside of 324%. To summarize, we have:

| Scenario | PBV Multiplier | Upside % |
|---|---|---|
| No growth | 1.29 | 35% |
| Mature Growth | 1.875 | 97% |
| Supernormal growth for 5 years followed by mature growth | 2.31 | 244% |
| Supernormal growth for 5 years followed by mature growth with a higher sustainable ROE assumption | 3.075 | 324% |

Thus, we have a whole bouquet of fair market value estimates, each more aggressive than the previous one, with upside ranging from 35% to 324%. At the same time, we have not made any assumptions till now that look outrageous or seemingly impossible. What level of conservatism is appropriate when evaluating a growth stock? This is a tough question you will have to answer. This dilemma can be partly offset by performing proper position sizing, which we will discuss later. Now let us return to this case and see what happened in FY21.

| | FY15 | FY16 | FY17 | FY18 | FY19 | FY20 | FY21 |
|---|---|---|---|---|---|---|---|
| Net Sales | 127 | 174 | 181 | 196 | 252 | 276 | 310 |
| Op. profit | 24 | 31 | 27 | 27 | 42 | 48 | 67 |
| OPM % | 19% | 18% | 15% | 14% | 17% | 17% | 22% |
| PBT | 13 | 18 | 13 | 17 | 24 | 30 | 54 |
| PAT | 9 | 11 | 7 | 12 | 17 | 22 | 39 |
| Net Fixed Assets | 58 | 67 | 98 | 111 | 119 | 125 | 152 |
| Net worth | 42 | 79 | 112 | 118 | 123 | 157 | 191 |
| ROE | | 26.20% | 8.90% | 10.70% | 14.40% | 17.90% | 24.80% |
| MCAP | 288 | 269 | 282 | 251 | 254 | 149 | 827 |

A 12% growth in sales but a whopping 77% growth in earnings! ROE races to almost 25% as OPM hits a high of 22%. The market has also amply rewarded the shareholders as market capitalization jumps to 827 Cr or 5.5 times in just 12 months. This is also higher than the most aggressive estimates we discussed.

Now it is time to revisit our assumptions. Let us see what happens if we increase the sustainable ROE to 20% but maintain the same growth expectation. So, we get mature growth multiplier of

(0.2-0.08)/ (0.12-0.08) = 3. The growth multiplier remains 1.23x, and hence the overall multiplier becomes 3.69x. The net worth has now increased to 191 Cr. We roll forward the fair market value estimate using the new net worth, and the fair market value now jumps to 3.69x191 = 705 Cr. But market capitalization is already 827 Cr. Does it mean it is time to sell? Is the market going ahead of fundamentals?

When these doubts linger, the next set of results arrive. The snapshot of H1FY22 results is as follows:

|            | H1FY22 | H1FY21 | FY21 |
|------------|--------|--------|------|
| Sales      | 217    | 122    | 310  |
| Op. profit | 51     | 27     | 72   |
| PBT        | 41     | 19     | 54   |
| PAT        | 31     | 14     | 39   |

The company has already delivered 80% of FY21 PAT in the first half of FY22 itself. The market capitalization has now jumped to 2,200 Cr. If you had decided to exit during the perceived overvaluation period, you would have lost a substantial part of potential returns.

At 2,200 Cr, the company has a PBV of more than 10x. Since the market capitalization has overshot the most aggressive of your assumptions, let us now try to calculate what growth rate the market is implying. We use the following equation to calculate the implied growth rate:

$$g = \left\{ PBV \times \frac{(r - g')}{(ROE' - g')} \times \frac{(1+r)^n}{(1+g')} \right\}^{1/n} - 1$$

$PBV = 10$

$r = 12\%$

$g' = 8\%$

$ROE' = 20\%$

$n = 10 \text{ years}$

$$g = \left\{ 10 \times \frac{(12\% - 8\%)}{(20\% - 8\%)} \times \frac{1.12^{10}}{1.08} \right\}^{\frac{1}{10}} - 1$$

$\therefore g \approx 25\%$

So, we conclude that the market is now probably estimating a 10-year CAGR in earnings of about 25%, which implies that the earnings are expected to double once in three years.

From a market capitalization of 149 Cr in FY20 when the stock was available at less than no growth valuation, it has reached a stage where the implied growth is almost 25% over the next ten years.

For a company with a healthy ROE, the virtuous cycle of topline growth leading to earnings growth leading to reinvestment of earnings leading to more topline growth can lead to phenomenal returns for the investors.



Reinvestment of earnings

Top line growth

Earnings growth
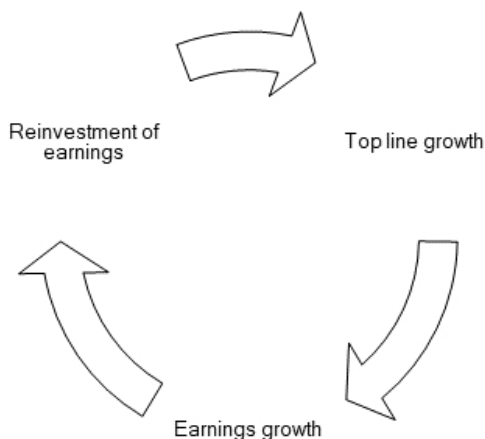
Selecting the right stock which can potentially deliver this kind of growth is exceedingly difficult. Even more difficult is to hold on to the growth stock as valuations always seem to keep scratching the surface of the improbable implied growth.

The market loves growth, and often, when it finds a company that demonstrates good growth and profitability, the valuations expand. Often the valuations run ahead of expectations, but the fundamentals also catch up with time. It is difficult to time the entry and exit based on simple valuation models. Holding on to such stocks involves a "leap of faith" and "trust in management to deliver" growth year in and year out. The story continues as long as growth continues. Market expectations become stiffer with time, and when the company finds it unable to deliver the expectations even while delivering perfectly acceptable results, corrections happen. There is a high probability of conservative investors selling out early in many similar cases. What you fix as the target price at the time of purchase often becomes a good entry-level price within a few quarters. If you follow the strategy of holding the stock irrespective of the price and the company falters on growth when sky-high expectations are built into the price, the correction can be savage, resulting in a lot of wealth evaporating in no time. The stock may also enter a prolonged time correction phase as

the wait for earnings to catch up happens. What then is the correct strategy? I do not know. You must develop your comfort zone as to how much you want to hold, and how much profits you want to book based on your business assessment. The position sizing strategies, which we will discuss in a later chapter, can also give some guidance.

If you ask me, I have found comfort in having a consistent investment approach that has worked over a period. It may sometimes result in selling too early and leaving too much on the table. A consistent framework can also ensure that you do not get too emotional about holding the stock. For example, if you feel that a stock's price is less than your fair value estimate, you buy it. If the price overshoots your target based on even the most optimum set of assumptions and you keep holding on to it, the consistency of your investment philosophy gets compromised. Once you end up with inconsistent investment philosophy, it can become very messy. The ideal situation is when you make the process involuntary, like a habit. The steps comprise company analysis, fair value estimation, checking the price for discount to fair value, buying, reassessing the situation regularly, and selling when the price exceeds the fair value estimate.

# How much is too much?

Mark Twain said, "History doesn't repeat itself, but it often rhymes." The Indian market has, of late, witnessed a trend of paying extremely high valuations for superior quality stocks. If one goes back in history, this phenomenon is eerily similar to the mid-60s in US stock markets, often known as the go-go years. Howard marks known for his brilliant memos and fantastic books like *The Most Important Thing* and *Mastering the Market Cycle* writes in his memo titled *Something of Value,*

*The growth investing camp, on the other hand, came into existence during the "go-go" early years of the 1960s, the decade in which I started my career in the equity research department at First National City Bank. Investor interest in rapid growth led to the anointment of the so-called Nifty Fifty stocks, which became the investment focus of many of the money-centre banks (including my employer), which were the leading institutional investors of the day. This group comprised the fifty companies believed to be the best and fastest growing in America: companies that were considered so good that "nothing bad could happen to them" and "there was no price too high" for their shares. Like the objects of most manias, the Nifty Fifty stocks showed phenomenal performance for years as the companies' earnings grew and their valuations rose to nosebleed levels, before declining precipitously between 1972 and 1974. Thanks to that crash, they showed negative holding-period returns for many years.*

It is another matter that over 25 years, the portfolio of the growth stocks bought at the lofty valuations still managed to do well. For more details, please read Jeremey Siegel's paper *Valuing the Growth Stocks: Revisiting the NIFTY FIFTY*. However, the stocks suffered a massive correction in between and provided much better entry opportunities.

Every valuation metric, say, PE, or PBV, reflects the collective investing wisdom of the market at any point in time. Behind every ratio, there is an expectation on the business performance, earnings growth, and capital efficiency, which finally translates into the number we see.

Let me take one innovative niche product company that has been consistently enjoying a PE ratio of about 80 and PBV of about 16 times and try to find what expectations are built into this stock. The financial snapshot of the company is presented below:

| | F11 | F12 | F13 | F14 | F15 | F16 | F17 | F18 | F19 | F20 | F21 | CAGR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sales | 2657 | 3127 | 3678 | 4283 | 4844 | 5361 | 5617 | 6078 | 7078 | 7294 | 7293 | 11% |
| Op. Profit | 458 | 485 | 558 | 672 | 771 | 1173 | 1262 | 1341 | 1371 | 1576 | 1686 | 14% |
| OPM % | 17% | 16% | 15% | 16% | 16% | 22% | 22% | 22% | 19% | 22% | 23% | |
| PAT | 310 | 324 | 424 | 450 | 513 | 803 | 860 | 962 | 925 | 1116 | 1131 | 14% |
| PAT Margin % | 12% | 10% | 12% | 11% | 11% | 15% | 15% | 16% | 13% | 15% | 16% | |
| Net worth | 1085 | 1321 | 1651 | 1952 | 2270 | 2638 | 3471 | 3574 | 4148 | 4456 | 5593 | |
| ROE % | | 30% | 32% | 27% | 26% | 35% | 33% | 28% | 26% | 27% | 25% | |

The sales CAGR over the period has been 11%. The operating profit CAGR has been 14% and is higher than the sales CAGR due to the improvement in operating margin. The PAT CAGR is also at 14%. The market capitalization of the company in FY21 was about 91,000 Cr. This market capitalization implied a PE ratio of 80x and PBV of 16x.

Based on the past performance, suppose you assume that the company can sustain an ROE of 28%. Let us use the supernormal growth model to estimate the growth rate implied by the current market price.

$$g = \left\{ PBV \times \frac{(r - g')}{(ROE' - g')} \times \frac{(1+r)^n}{(1+g')} \right\}^{1/n} - 1$$

So, we use

| n | 20 |
|---|---|
| r | 12% |
| ROE | 28% |
| g' | 8% |
| PBV | 16 |

So, the growth g works out to 18%, which means that the market expects the business to grow its earnings at a rate much higher than the historical growth rate. Also, to be noted is that the sales CAGR has been only about 11% which means that market probably expects the margins to increase even further.

At 18% growth, the PAT reported by the company after 20 years will be 31,000 Cr. As of date, there are probably about ten companies that generate this kind of profit. These ten companies are in industries like commodities, IT, or financial services. The big question is whether this company, which is into innovative niche industrial products, can reach the same level as these large companies over the next 20 years.

It can indeed happen, but the risk of not meeting the expectation will be high, and ensuing corrections can be quite savage. When a stock at 80 PE corrects to 50 PE following poor results, it still looks expensive. Business is dynamic and up and down cycles keep happening. Like the NIFTY Fifty companies of the US delivered reasonable returns over the long term, this company may also deliver acceptable returns if the holding period is long enough. But the extent of expectation built in

by the market and the probability of the company failing to meet this expectation are high enough to not consider taking an exposure at such lofty valuations. Remember, many of the NIFTY Fifty companies in the US underwent a correction of over 50% when the tide turned, giving opportunities to the investors.

Quality companies are seldom available cheap. But in sharp market corrections, we often get the opportunity to load up on some high-quality companies. The entry price has a significant bearing on the returns generated from stocks. However, for high-quality companies with a good runway of growth ahead you can compromise a little on the entry price as the results will still be satisfactory over time. Compromise does not mean that you end up paying obscenely high valuations. It is just that you can probably lower the stringency of the approach in selecting stocks when it comes to higher quality.

As Benjamin Graham said, *"Undervaluation caused by neglect or prejudice may persist for an inconveniently long time and the same applies to inflated prices caused by over-enthusiasm or artificial stimulants."* Superior quality growth stocks are often significantly overvalued, and this situation may persist for a long time. There is always a walkaway price beyond which you should not pay at any point in time. Maintaining a watchlist of superior quality companies with their regularly updated walkaway price is critical for you to act when the opportunity presents itself.

# Residual Income Valuation Model

In the valuation framework we used earlier, we estimated the PBV multiple, which we use to calculate the stock's fair market value. For a mature company, the PBV was given by:

$$PBV = \frac{ROE - g}{r - g}$$

One problem we encountered here was what to do when the company retains more capital than what is needed to support the growth. This makes the capital allocation policy ROE dilutive. So, based on the company's history and stated capital allocation policy, you need to assume the ROE that needs to be used in this model. Capital retention more than what is warranted contributes to earnings growth in the form of other income. But this income is useless to the investor as it is well below the required rate of return. So, the impact of "useless" earnings contributing to earnings growth needs to be assessed. We should also estimate the extent of useless capital retained and its impact on the ROE.

While the PBV model is eminently workable and easy to use, if you want a stricter approach that can address the above issues, the residual income valuation model is the way to go. I will briefly describe the model and explain how it solves the problems mentioned. To know more about the model, I would recommend the book *Accounting for Value* by Stephen Penman.

The residual income valuation model tweaks the PBV model a little so that only 'useful' earnings growth is considered for valuation. Let me illustrate how the model can strip out the useful part of earnings growth through a simple example. Assume you have a fixed deposit of 1,000 that earns an interest of 6% per annum. The deposit's term is five years, and the principal and accrued interest are receivable on maturity. Your earnings will be as follows:

| Year | Start | Earnings | End | Earnings Growth % |
|------|-------|----------|-----|-------------------|
| 1 | 1,000.00 | 60 | 1,060.00 | |
| 2 | 1,060.00 | 63.6 | 1,123.60 | 6.00% |
| 3 | 1,123.60 | 67.42 | 1,191.02 | 6.00% |
| 4 | 1,191.02 | 71.46 | 1,262.48 | 6.00% |
| 5 | 1,262.48 | 75.75 | 1,338.23 | 6.00% |

So, you will receive 1338.23 at the end of 5 years. Your earnings have grown at the rate of 6% every year. If your required rate of return is 6%, the fair value of this deposit is the present value of the cash flows discounted at the rate of 6%.

The fair value of the deposit is given by:

$$FMV = \frac{1338.23}{1.06^5}$$

$$So, FMV = 1000$$

If your required rate of return is 12%, then the deposit is worth only

$$\frac{1000 \times 1.06^5}{1.12^5} = 759$$

If your required rate of return is only 5%, then the value of the deposit is

$$\frac{1000 \times 1.06^5}{1.05^5} = 1048$$

So, the investment has a value more than the book value of 1,000 only if the return on book value is more than the required rate of return.

It is also evident from the PBV model that when the ROE is equal to the required rate of return, the investment is worth just the book value. A premium to book value can be paid only if the investment earns returns more than the required rate of return. Similarly, if the investment earns sub-optimal returns i.e., return less than the required rate of return it is worth less than the book value. When we take perpetuity as the time frame the investment earning a return less than the required rate of return is worth zero from an earnings perspective.

The residual income valuation model recognizes book value as the starting point of fair market value estimation. We add an excess over book value to fair market value only if the investment earns a return more than the required rate of return.

For example, let us take a company that earns 20% ROE and grows

earnings at 8% till perpetuity. The earning over and above the earning warranted by the required rate of return is called residual earning. So, if we start with a book value of 100, the required rate of return of 12% will mean that we need earnings of at least 12. Since the ROE is 20%, the residual income is 8. We need only 40% of earnings to be retained to maintain 8% earnings growth. So, next year, we begin with a book value of 108. The required rate of return of 12% means that the minimum required earnings is 12.96. If ROE is 20%, then the reported earning is 21.6. This implies that the residual earning in the next year is 8.64. Thus, the residual earning also grows at 8%.

The price for these cash flows can be expressed as the sum of the current book value and the present value of the residual earnings. In the example above the price will be:

$$P = 100 + \frac{8}{1.12} + \frac{8 \times 1.08}{1.12^2} + \cdots$$

$$P = 100 + \frac{8}{1.12} \left( \frac{1}{1 - \frac{1.08}{1.12}} \right)$$

$$P = 100 + \frac{8}{0.04}$$

$$P = 300$$

This tallies with the PBV framework as

$$PBV = \frac{(20\% - 8\%)}{(12\% - 8\%)}$$

$$PBV = 3 \times$$

$$P = 3 \times 100 \; or \; 300$$

In other words, the value addition over the book value of a company depends not on the earnings growth but the growth in residual earnings.

Warren Buffett said, *"Time is the friend of the wonderful company, the enemy of the mediocre"*. A quantitative proxy to Buffett's wonderful business is a business that can consistently earn well above the required rate of return and continuously grow its residual earnings.

The advantage of this model is that the quality of earnings growth is captured automatically when we strip out the capital charge on equity and see how the residual income is growing.

The concept is also closely related to another concept in finance known as the Economic Value Added (EVA). This is a measure of the performance of a firm and is given by

$$EVA = NOPAT - WACC \times Invested\ Capital$$

In the above formula, NOPAT stands for Net operating profit after tax, and WACC stands for Weighted average cost of capital.

Let me illustrate the concept more through a simple case study.

The following table illustrates how a company has historically performed as far as residual earning is concerned.

| | FY15 | FY16 | FY17 | FY18 | FY19 | FY20 | FY21 |
|---|---|---|---|---|---|---|---|
| Net worth | 4,742 | 6,526 | 7,604 | 8,410 | 9,471 | 10,130 | 12,806 |
| PAT | 1,395 | 1,745 | 1,939 | 2,039 | 2,156 | 2,705 | 3,139 |
| ROE | | 36.80% | 29.70% | 26.80% | 25.60% | 28.60% | 31.00% |
| Equity Charge at 12% | | 569 | 783 | 912 | 1,009 | 1,136 | 1,216 |
| Residual Income | | 1,176 | 1,156 | 1,126 | 1,147 | 1,569 | 1,924 |

We calculate the equity charge based on our required rate of return of 12%. For example, the beginning net worth in FY21 is 10,130 Cr. We need the company to make at least 12% of that as the PAT. This works out to 1,216 Cr. The actual PAT that the company delivered is 3,139 Cr. So, the residual income is the excess over the risk charge of 1,216 Cr, which is 1,924 Cr. The data presented here is for a highly consistent blue-chip company that commands extremely high valuations. It is evident from the data why this is so, as the company has been growing the residual earnings at a healthy pace. The 5-year CAGR of earning at about 12% and residual earnings at about 10% are healthy and in line, indicating that the earnings growth has not been ROE dilutive and capital allocation has been good. Let us take another case:

| | FY16 | FY17 | FY18 | FY19 | FY20 | FY21 |
|---|---|---|---|---|---|---|
| Net worth | 252 | 305 | 354 | 401 | 446 | 516 |
| PAT | 39 | 55 | 61 | 64 | 76 | 70 |
| ROE | | 22.00% | 20.00% | 18.00% | 19.00% | 16.00% |
| Equity Charge at 12% | | 30 | 37 | 43 | 48 | 53 |
| Residual Income | | 25 | 24 | 21 | 28 | 16 |

If you look at the period, FY17 to FY21, the earnings CAGR has been about 6%. But the residual income declined during the period. This decline indicates that the company is facing the problem of misallocation of capital. The declining trend in ROE also points to the same issue.

The model tells the companies that if they want to retain shareholder funds, they better deliver the commensurate value to the shareholders.

For the second case, the traditional PBV model may tempt you to assume a suitable sustainable ROE with an earnings growth of 6% to arrive at the PBV multiplier. If you assume that the sustainable ROE is

18% and 6% is the earnings growth, you get a PBV multiplier of 3x or the fair market value of 3 x 516 = 1548 Cr.

If you use the residual income model, you may estimate the company's value with, say, residual earnings of 23 Cr (average during the period) but with zero growth in residual earnings. This gives the fair market value as

$$516 + \frac{23}{0.12} = 708 \; Cr$$

The fair value estimate is almost 50% of the estimate calculated using the PBV model. If you use the PBV model with zero growth and 16% as ROE, you get the PBV multiplier as 1.33x. Applying this to the net worth of 516 Cr gives you 687 Cr as the fair value estimate, which is closer to the estimate provided by the residual income valuation model. While the continuous decline in ROE indicates that capital misallocation is an issue, the residual income valuation model helps you to probably quantify it better so that you do not get carried away by non-value accretive earnings growth.

Earnings growth has a significant impact on the estimate of fair market value. The residual income model helps you to consider only the value-accretive growth. The 6% reported earnings growth is not value accretive as it comes at a cost to the shareholder, with the company retaining more capital than warranted and deploying it in avenues earning sub-optimal returns.

An analysis of the growth in residual earnings can help you identify the quality of earnings growth. Unless the quality of earnings growth is good, retained earnings will not be value accretive to the shareholder. Looking at the history of a company through the lens of residual income hence adds more insights to your valuation exercise.

# Valuing Commodity Cyclicals

It is difficult to predict the commodity cycle right. If you are correct, you can generate a significant return. However, it is easier said than done. If you get caught at the wrong end of the cycle, the price correction that you will witness can be savage. Even if you get it right, the tension to not go wrong often forces you to sell out early as there is always a worry about when the cycle will turn. In this chapter, I suggest a framework that some of you may find helpful. The risk of investing in a commodity company is the cycle turning against your expectation leading to the company slipping into losses. Hence, to minimize the risk of going wrong, you may start by looking at commodity companies which are:

a) Reasonably mature operations – This ensures that depreciation levels are not high and the risk of the company reporting book losses is lower.

b) Not much capex planned – This ensures that the company generates good free cash flows even though it may be volatile due to the cyclical nature of the business.

c) Low leverage – This is probably the most critical aspect. If the debt is low, the chances of the company going bankrupt are significantly reduced even in the worst of the commodity downturns

d) ROE across the cycle is reasonably attractive – The company should have ideally demonstrated a healthy operating ROE across different cycles over the long term

I am presenting the financials of a mining company that ticks most of the boxes:

|  | FY16 | FY17 | FY18 | FY19 | FY20 | FY21 |
|---|---|---|---|---|---|---|
| Sales | 6,456 | 8,828 | 11,615 | 12,153 | 11,699 | 15,370 |
| PBT | 4,092 | 4,293 | 6,179 | 7,199 | 6,123 | 8,902 |
| PAT | 2,712 | 2,589 | 3,806 | 4,642 | 3,610 | 6,253 |
| Dividends paid | 4,361 | 1,629 | 1,360 | 1,690 | 1,620 | 2,274 |
| Net worth | 29,514 | 22,835 | 24,670 | 26,258 | 27,840 | 30,049 |
| Net Cash in books | 13,267 | 5,289 | 4,938 | 4,244 | 1,827 | 3,812 |
| ROE % |  | 9% | 17% | 19% | 14% | 22% |

The company distributed about 10,000 Cr through two buybacks during the period. This impact is visible in the cash balances, which show a significant dip in FY17 and FY20. There is no leverage, and the company has been following a capital allocation policy of distribution of a sizeable portion of earnings as buybacks/dividends. After a large-sized buyback in FY17, the net worth has increased steadily.

The following chart shows the price and PBV movement of the stock over the period. The horizontal line shows the median PBV.
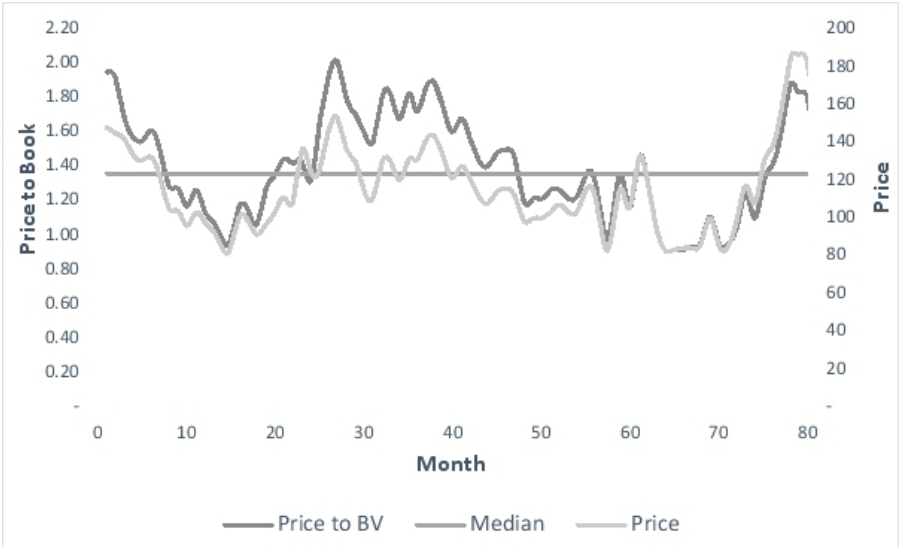


It is evident from the above chart that the capital gain for an investor who has held the shares over the whole period is next to nothing. The stock is not a candidate for buy and hold.

While earnings can be volatile, the PBV is not as volatile as the net worth is stable and increasing.

One way of analyzing this stock from an attractiveness point of view is to look at the PBV movement. I have presented the PBV statistics of the company over the 85 months just before writing this chapter. The PBV statistics of the company over the period are as follows:

| PBV | Value |
|---|---|
| Minimum | 0.88 |
| Maximum | 1.98 |
| Mean | 1.36 |
| Std. deviation | 0.3 |
| Median | 1.33 |
| No. of months | 85 |

The mean PBV is 1.36, and the standard deviation (sd) of PBV is 0.3. So, we can define a range from 1.06 to 1.66 as mean ± 1 sd. Based on this definition, the time spent by the stock in the different PBV ranges is given in the histogram.

**PBV histogram**

| | | | |
|---|---|---|---|
| 18% | 33% | 31% | 18% |
| <1.06 | 1.06-1.35 | 1.36-1.66 | >1.66 |
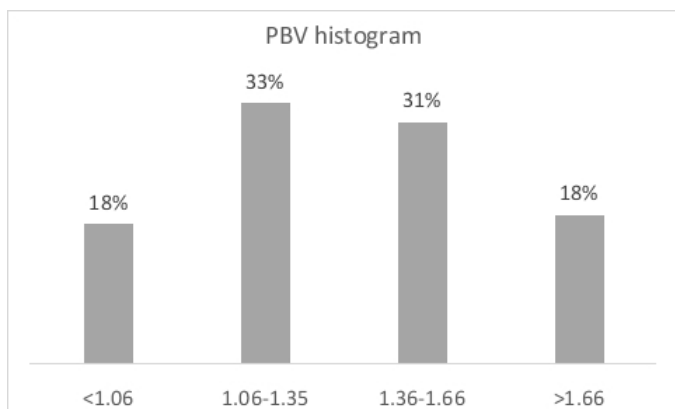
We see that the stock spends about 64% of its time in the range mean ± 1sd. It spends roughly equal time below 1sd and above 1sd. We can also calculate the conditional mean PBV. The conditional mean PBV when the PBV is below 1sd is 0.96 and above 1sd is 1.81.

While buy and hold does not generate meaningful capital gains, a movement from 0.96 PBV to 1.81 PBV implies a return of about 88%. Even a reversion from 0.96 PBV to the median PBV of 1.33 would be a healthy 38% return. The returns increase with time as the company increases its net worth at a steady pace. The advantage is that while waiting for the PBV to move to the desired level, you may get the dividends/buybacks with a yield of 4-10%, making it a situation where you are paid handsomely to wait.

Again, since you have reasonably quantified the expected upside, you can use the information to get the position sizing right which we will discuss later.

The other considerations include:

a) Check for adverse structural changes that can cause permanent loss of earnings for the company. For example, if it is a miner, a change in royalty and profit-sharing structure can impact the company's future profits. Government policies matter a lot.

b) Any unforeseen losses due to a sharp fall in commodity prices can adversely impact the company's income. For example, we saw how oil prices became negative in April 2020. Such sharp falls in commodity prices can lead to net worth getting depleted.

c) Interestingly the PBV at the lower end of the range often indicates that the commodity prices are low since low prices lead to low earnings and trigger stock correction resulting in the PBV drifting

towards the lower end of the range. When the conservative player in the industry is available at the lower end of the PBV range, aggressive investors with a good risk appetite can start looking at other players in the same industry who have a high amount of leverage and other issues. Often, the maximum returns when commodity prices rebound are made by investing in inefficient players who survive the down cycle.

d)   The exercise to look at other companies in the sector may lead us to alternate themes like debt reduction that we discussed earlier.

The investment theme is based on mean reversion, and the anchor we are using here is the book value. Hence, reported earnings are also critical. It may be argued that, in some cases, the company makes good free cash flows, but PAT is negative due to high depreciation. In such cases, since the book value can get depleted, the anchor that we have chosen becomes unstable. Similarly, the extent of leverage decides how long a company can survive. It is difficult for an unleveraged firm to go bankrupt. On the other hand, since companies must pay interest irrespective of the business cycle, an adverse commodity cycle can result in a leveraged company quickly sliding into bankruptcy. The vicious cycle of low earnings leading to poor debt service coverage ratios leading to rating downgrades, leading to increased borrowing costs, can have a debilitating impact on the company's financials.

Let me conclude by saying this. It is extremely difficult to get the commodity cycle right, and many opportunities are available outside the commodity space. If you are exploring this space, having a quantitative framework that automates the decision-making process often helps. Mean reversion of PBV is just one such quantitative framework. You can devise your techniques. But overall, a quantitative approach helps especially when investing in this space without any specific edge in predicting the commodity prices.

# Ordinary stocks, extraordinary returns

Warren Buffett made a fortune by investing in property and casualty (P/C) insurers. In his 2009 letter to shareholders, where he defines the beauty of the insurance business, he writes:

*Insurers receive premiums upfront and pay claims later. In extreme cases, such as those arising from certain workers' compensation accidents, payments can stretch over decades. This collect-now, pay-later model leaves us holding large sums – money we call "float" – that will eventually go to others.*

*Meanwhile, we get to invest this float for Berkshire's benefit. Though individual policies and claims come and go, the amount of float we hold remains remarkably stable in relation to premium volume. Consequently, as our business grows, so does our float. If premiums exceed the total of expenses and eventual losses, we register an underwriting profit that adds to the investment income produced from the float. This combination allows us to enjoy the use of free money – and, better yet, get paid for holding it.*

*Alas, the hope of this happy result attracts intense competition, so vigorous in most years as to cause the P/C industry as a whole to operate at a significant underwriting loss. This loss, in effect, is what the industry pays to hold its float. Usually, this cost is fairly low, but in some catastrophe-ridden years the cost from underwriting losses more than eats up the income derived from the use of float. In my perhaps biased view, Berkshire has the best large insurance operation in the world. And I will absolutely state that we have the best managers.*

*Our float has grown from $16 million in 1967, when we entered the business, to $62 billion at the end of 2009. Moreover, we have now operated at an underwriting profit for seven consecutive years. I believe it likely that we will continue to underwrite profitably in most – though certainly not all – future years. If we do so, our float will be cost-free, much as if someone deposited $62 billion with us that we could invest for our own benefit without the payment of interest.*

In insurance parlance, the float is called technical reserves, which include the premiums that have been already collected but will be earned in the ensuing periods and the provisions set aside for expected claims. Thus, the technical reserves belong to the policyholders, but

the economic benefits of holding the technical reserves accrue to the shareholders. Thus, technical reserve adds to the investible corpus and provides the same benefits that an investor receives if he uses leverage.

Let me illustrate how the concept of float works with a simple numerical example.

Suppose an insurance entity requires a capital of 40 Rs to write a business of 100. At steady state, let the float be 150. This takes the investment corpus to 190. Assume that the premium can fully cover the losses, expenses, and intermediary charges. In insurance parlance, the company operates at a combined ratio of 100%. Even if the entire investment corpus is in risk-free assets, at say 6%, the company gets an investment income of $190*0.06 = 11.4$. Underwriting losses are zero. So, the company makes a PBT of 11.4. If the tax rate is 25%, then PAT will be 8.55. This PAT leads to an ROE of $8.55/40 = 21\%$. Even with no investment risk, the company can generate an extremely healthy ROE through prudent underwriting. Buffett's entities go a step further and invest in equity of high-quality stable companies, which leads to even better results, thereby boosting the ROE. While Buffett does not prefer to use leverage, the insurance business, in which he has made sizeable investments, does use borrowing though it is in the form of float.

The use of leverage through derivatives to invest in equity has led to the bankruptcy of many traders. However, exposure to some straight equity positions may benefit if you use leverage. Charlie Munger said, *Over the long term it is hard for a stock to earn a much better return than the business which underlies it earns.*

If we extend this argument, investment in sectors like utilities that earn the regulated rate of return may not really be good in the long term. However, sectors like utilities can become good short-term investment candidates, and leverage can enhance the return on investment in some instances.

Let us take a utility company. The ROE of the company over the last many years is as follows:

| FY11 | FY12 | FY13 | FY14 | FY15 | FY16 | FY17 | FY18 | FY19 | FY20 | FY21 |
|------|------|------|------|------|------|------|------|------|------|------|
| 15%  | 14%  | 17%  | 14%  | 11%  | 13%  | 12%  | 11%  | 13%  | 10%  | 12%  |

You further analyze the company and conclude that the ROE is pulled back by a significant amount of capital work in progress, and the core ROE is higher than the reported ROE. The ROE guarantee available for operational projects is around 15-16%. Say you assume 14% as the sustainable ROE of the company and are comfortable with a no-growth PBV multiple of 1.17 for the company. You look at the

historical valuations enjoyed by the company, and over the last six years, the PBV statistics of the company were as follows:

| Mean | 1.18 |
|---|---|
| Median | 1.23 |
| Minimum | 0.74 |
| Maximum | 1.55 |

The company has a stated dividend policy of distributing at least 5% of net worth as a dividend.

Let us make the following projection over the next five years.

| | FY21 | FY22 | FY23 | FY24 | FY25 |
|---|---|---|---|---|---|
| Reported ROE | | 12% | 12% | 12% | 12% |
| PAT (ROE x Beginning net worth) | | 12 | 12.84 | 13.74 | 14.7 |
| Dividend @ 5% of beginning net worth | | 5 | 5.35 | 5.72 | 6.13 |
| BV | 100 | 107 | 114.49 | 122.5 | 131.08 |

Assume that the stock is available at 1x PBV in FY21. From a straight equity point of view, the fair value is 117, implying an upside possibility of about 17% in the stock. As Buffett said, *Time is the friend of the wonderful company, the enemy of the mediocre*. If the time taken to revert to 1.17 PBV increases, your annualized return trends downwards. Let us assume that the reversion to 1.17 times book value happens only in FY25. The cash flows for the investor are as follows:

| | FY21 | FY22 | FY23 | FY24 | FY25 |
|---|---|---|---|---|---|
| Investor Cashflow | -100 | 5 | 5.35 | 5.72 | 6.13+1.17*131.08 = 159.5 |

The IRR of the above series of cash flows is 16%.

Let us now assume that you have borrowed 50% of the funds at 10% to invest in this opportunity. This means you invested 50% as your own money and 50% as proceeds from borrowing. Your revised cash flow will be as follows:

| | FY21 | FY22 | FY23 | FY24 | FY25 |
|---|---|---|---|---|---|
| Gross cashflow | -100 | 5 | 5.35 | 5.72 | 6.13+1.17*131.08 = 159.5 |
| Interest + Debt repayment | 50 | -5 | -5 | -5 | -5-50 = -55 |
| Net cash flow to investor | -50 | 0 | 0.35 | 0.72 | 104.5 |

IRR of the revised cashflows is around 21%. Thus, the presence of leverage can enhance your returns even if the operational business is mediocre. The dividends can more than take care of the interest outgo, which means that the position is on autopilot mode until you achieve your target price to book multiple. The incremental return over and above the business ROE happens because you have purchased the stock at a discount to fair value and the return is further enhanced by use of leverage. The longer it takes to bridge the discount, the lower will be the return.

With dividends taking care of the interest requirement, you can participate more meaningfully in the bridging of the valuation gap part of the investment thesis.

What is critical here is that you choose a highly stable business with a good dividend yield. Leverage is always dangerous, and any change in the macro-environment that can permanently impact the business can significantly affect your returns and may even result in losses. In stable companies, the chances of the stock being available at a 30% or more discount to intrinsic value are relatively rare. This approach can help you to widen your investment universe. While a similar impact is achievable if you use derivatives, in this case, you will not have the problem of MTM accounting, cash calls due to volatility, change in margin requirements, or rollover. Also, not all stable stocks have their derivatives listed, and even if they are, many are illiquid.

The Indian market is slowly witnessing the rise of Real Estate Investment Trusts (REIT), which help the investors own pieces of income-producing properties. REITs are regulated entities and must make quarterly distributions of most of their cash flows. You may, at times, get the REIT at distribution yields which are meaningfully higher than or at least equal to the cost of borrowing. Based on your analysis, if you feel that the REIT's price is not reflecting its fundamentals and the price can increase, you can use leverage and deploy the quarterly proceeds from REITS to cover your cost of borrowing. Thus, you create a structure where you can capture the expected appreciation more meaningfully.

# The minimum value of a business is zero

In this chapter, I will be touching upon special situations, which can be a good hunting ground for individual investors. Often, management of companies with good businesses that generate healthy free cash flows become overconfident and get into lines outside their circle of competence. They enter new lines of businesses, which they realize is not their cup of tea after a few years. A significant amount of capital is sunk into these lines, which generate sub-optimal ROE or even losses. The business may be housed within the company or in a subsidiary. In the latter case, investors who often concentrate only on the consolidated numbers miss the big picture.

When the realization dawns that the new business line is cancer that needs to be removed the result is often a corporate restructuring. It could involve a slump sale of the business or the sale of the subsidiary. It may also be a spin-off which gets listed separately to sell it off later. When the business is together, the company often receives a valuation based on the ROE and earnings of the combined entity. So, the valuation that the good part of the business would have commanded also suffers. When this negative contributor is removed the ROE and earnings profile of the company improves. This leads to a jump in the valuation of the company. In effect, we can say that the contribution of the 'bad' part of the business to the company's valuation jumps from negative to zero leading to an appreciation in the company's stock price.

Let me give a small illustration:

Suppose there is a company with two lines of business A and B. A is a good business with healthy ROE of 20%. B is a loss-making business, which the management is currently nurturing. Business B makes a negative ROE of 20%. Assume that the company has committed to B about 20% of capital allocated to A. Let us assume that the company gets a valuation based on 8% sustainable growth. The value of the combined entity is arrived at as follows:

| Business A | |
| --- | --- |
| PAT | 100 |
| Share of net worth | 500 |
| ROE | 20% |
| Business B | |
| PAT | -20 |
| Share of net worth | 100 |
| ROE | -20% |
| Combined (A+B) | |
| PAT | 80 |
| Net worth | 600 |
| ROE | 13% |
| | |
| PBV for (A+B) | 1.33 |
| Value of (A+B) | 800 |

Let us now assume that the management has decided to sell its loss-making line B. Usually, companies find buyers who are confident of turning around operations and thus realize some reasonable value for the business. Let us assume that the company manages to find a buyer

willing to pay 0.5x the net worth of B and then distributes the cash flow to the shareholders. The value of the business to the shareholder after the sale of B is as follows:

| | |
|---|---|
| PBV for A standalone (based on 20% ROE and 8% growth) | 3 |
| Value of A standalone | 1500 |
| Value of B (@ 0.5X PBV) | 50 |
| Post restructuring value | 1550 |
| Return % | 94% |

In a way, the value of B when it was part of the business was 800-1550 = -750. So, B was pulling down the overall valuation by 750. A wrong deployment of 20% of capital has led to the value decreasing by almost 48%.

This situation is similar to the analysis we did on cash hoarding companies. In both cases, the issue at hand is the misallocation of capital. However, the situation here is worse because B was pulling down the profits and the ROE. On the other hand, cash pulls down the ROE to a lower extent and contributes to the earnings.

While the illustration is quite easy to understand, you will be surprised to see the number of businesses with value-destroying diversification pulling down the valuation of the whole company. So, when analyzing the business, it makes sense to see what percentage of the overall value is coming from the various lines of business. Analysis of segmental finances is hence extremely critical. If the company has a subsidiary, it will be good to know the value of the contribution by standalone operations and the subsidiaries' contribution.

When such companies eventually go for some restructuring, there is a possibility of promising investment opportunities arising.

Here is an example of a company with reasonable return metrics:

| | FY15 | FY16 | FY17 | FY18 | FY19 | FY20 | FY21 |
|---|---|---|---|---|---|---|---|
| Sales | 1,029 | 921 | 936 | 1,184 | 1,313 | 1,352 | 1,295 |
| PAT | 75 | 100 | 103 | 119 | 117 | 123 | 130 |
| Net worth | 619 | 581 | 689 | 709 | 827 | 944 | 1,072 |
| ROE | | 16% | 18% | 17% | 16% | 15% | 14% |

However, when you investigate the segmental results of the company, a completely different picture emerges.

| | FY15 | FY16 | FY17 | FY18 | FY19 | FY20 | FY21 |
|---|---|---|---|---|---|---|---|
| Sales | 1126 | 929 | 944 | 1188 | 1313 | 1359 | 1295 |
| Div_A | 269 | 269 | 297 | 347 | 362 | 376 | 408 |
| Div_B | 319 | 323 | 250 | 401 | 484 | 523 | 448 |
| Others | 538 | 337 | 396 | 440 | 468 | 460 | 438 |
| | | | | | | | |
| EBIT | 113 | 140 | 138 | 183 | 183 | 186 | 177 |
| Div_A | 71 | 90 | 102 | 85 | 92 | 94 | 127 |
| Div_B | 33 | 39 | 39 | 89 | 90 | 102 | 36 |
| Others | 9 | 11 | -3 | 9 | 1 | -10 | 13 |
| | | | | | | | |
| Capital | 570 | 580 | 694 | 938 | 1142 | 1272 | 1159 |
| Div_A | 84 | 105 | 130 | 193 | 202 | 182 | 214 |
| As a % of | 15% | 18% | 19% | 21% | 18% | 14% | 18% |
| Div_B | 196 | 196 | 269 | 385 | 522 | 566 | 540 |
| As a % of | 34% | 34% | 39% | 41% | 46% | 45% | 47% |
| Others | 289 | 279 | 294 | 359 | 418 | 523 | 405 |
| As a % of | 51% | 48% | 42% | 38% | 37% | 41% | 35% |
| | | | | | | | |
| ROCE | | 25% | 24% | 26% | 20% | 16% | 14% |
| Div_A | | 108% | 97% | 65% | 47% | 46% | 70% |
| Div_B | | 20% | 20% | 33% | 23% | 20% | 6% |
| Others | | 4% | -1% | 3% | 0% | -2% | 3% |

It looks like division A is a line of business where the company enjoys a healthy competitive advantage. But it seems to be a mature line. B's return metrics are good, and it looks like a line with good growth prospects. Redeployment of cash flows from business A into business B should be good for the shareholders. The problem is the 'others' segment. This segment consumes about 40% of the overall capital employed and returns from this line are paltry. If the company decides to take this segment out, it should be value accretive for the shareholders.

Note that value creation need not be only through a sale of the business. If the management can turn around the operations and improve the profitability leading to return metrics improving, it will have the same impact on value creation.

There may also be situations the other way around where the subsidiary is profitable while the standalone operations are not so

great. Whatever the case, it is always good to know the drivers of each business segment to the overall company value. Corporate actions involving divestments, especially in companies not so well tracked by the analyst community, are a fertile hunting ground for opportunities.

There may also be situations where a small division of a large company is spun-off as a new entity. In many similar cases, the spun-off entity becomes a marginal holding for many large-sized funds, and the fund managers immediately exit from the stock upon listing. Such selling for non-fundamental reasons can also lead to opportunities for individual investors.

When a company spins off its bad unit, there is value accretion to the shareholders. However, do not ignore the 'bad unit'. The entire market would prefer the good business with good return metrics and exit the poor business. While the poor unit's value may not be great, according to the traditional valuation metrics, there is a chance that the valuation of the poor business will fall well below its liquidation value. Time is not a great friend of stocks purchased based on asset-based valuations. However, poor business units can become available at a significant discount to asset-based valuation in a spin-off. You can consider taking exposure if some asset monetisation trigger is visible.

It is also important to analyse where the promoter's interests are in case of spin-off or demerger. Promoters know much more than shareholders and what they do with the spun-off entity needs to be monitored. There can be situations where the promoters significantly increase their ownership in the spun-off entity through buybacks, open market purchases, or preferential allotments. All these corporate actions give clues about impending catalysts that may unlock value.

Entities with accumulated losses can also be pretty valuable as they can offer a tax shield depending on the taxation rules. In such cases, the value of the tax shield itself can be the minimum value of the entity.

# Position sizing

George Soros said, *"It's not whether you're right or wrong, but how much money you make when you're right and how much you lose when you're wrong."*

In this chapter, we discuss position sizing. Position sizing is a critical aspect of portfolio management. Position sizing refers to the percentage of the portfolio that the individual investor is willing to expose to a particular stock. There are many investment books on how to pick stocks, but few books talk about how to quantify the possible upside and fewer talk about how much exposure you can take in a position.

Many a time, investors get carried away by individual stock performances. A portfolio that generates adequate returns while minimising the probability of permanent capital loss should be your ultimate goal. In this context, position sizing is critical. A 10% position generating a 25% return is more valuable than a 1% position that doubles. While investors put in a lot of time and effort to identify the stock to buy, they spend little time deciding how much to invest in the stock. We discussed the valuation frameworks that can help you decide whether to buy a stock. The position sizing framework answers the second and equally important question - how much to buy? The entire investment process can be summarized by the following chart.
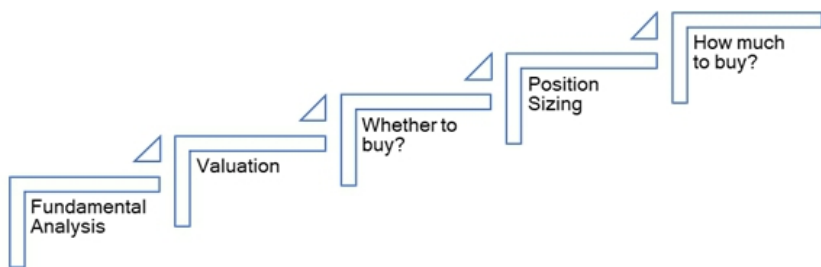


This book begins at the second step, and I have presumed that you are already comfortable with the fundamental analysis part of the process.

When you begin evaluating a stock, and find that it is fundamentally sound, you do the valuation exercise. Based on the techniques mentioned in the earlier chapters, you arrive at a target price with which you are comfortable. The upside potential from the current price to the target price should be the driver of how much funds you can deploy to the idea. The position sizing framework gives you an

idea about how much funds you can deploy in a new idea. This aspect is important to ensure that the allocation is optimal.

Once a position is initiated, the valuation exercise is repeated at regular intervals (say, after every quarterly result), which helps you revise the target price depending on how the fundamentals unfold vis-à-vis your expectations. As the stock price approaches your target price, the potential upside decreases. The position sizing framework will help you dynamically reassess the situation and provide you with a quantitative framework to decide how much of the position needs to be pruned, if required. This aspect is critical because it ensures that you crystallise some gains when the risk-reward equation becomes adverse.

Lastly, you are usually fully invested. When a new stock looks compelling enough to buy, many investors blindly reduce the position of their top holdings, which are often the stocks that have risen the most. They deploy sale proceeds in the new idea. Which stock to prune must depend on the potential upside you see in the stock. It should not be based on the past return that the stock has delivered. Giving information about what stock to sell and how much stock to sell, based on relative attractiveness, is the other important aspect addressed by the position sizing framework.

Thus, the position sizing framework helps you to:

a) Quantify how much exposure you can take to a new stock idea.
b) How much pruning of a position needs to be done based on your analysis of the actual performance vis-à-vis the company's expected performance?
c) Identify what to sell and how much to sell, based on the relative attractiveness of existing positions if a new idea needs to enter a fully invested portfolio.

One approach that I have found useful in position sizing is the Kelly criterion. Kelly's approach has been endorsed by many famous investors – Ed Thorp, Charlie Munger, and Mohnish Pabrai, to name a few. I would recommend you read the book *Fortune's Formula* by William Poundstone, which gives some information about this approach. The approach is based on the principle of maximizing the geometric return. It helps you arrive at the optimum bet size, and the calculated position can be tailor-made to your risk appetite.

The mathematics behind Kelly's formula is a straightforward application of deriving the maxima using the first derivative. It is available on Wikipedia, but I am reproducing it here for your information.

If we allocate a fraction 'f' of the wealth to a bet which gives odds of

'b' with winning probability 'p' and losing 'a' with probability q=1-p, then 'f' can be calculated by maximizing the geometric return 'r' as follows:

$$r = (1 + fb)^p \times (1 - fa)^q$$

$$E = \log(r) = p.\log(1 + fb) + q.\log(1 - fa)$$

*Maximizing E:*

$$\frac{dE}{df}\bigg|_{f=f^*} = \frac{pb}{1+f^*b} - \frac{qa}{1-f^*a} = 0$$

$$\therefore pb(1 - f^* a) - qa(1 + f^* b) = 0$$

$$f^*ab(p + q) = pb - qa$$

$$\because (p + q) = 1 \text{ the above equation reduces to}$$

$$f^* = \frac{p}{a} - \frac{q}{b}$$

Let us take a simple example. Suppose you get an upside of 20% with an upside probability of 60%, and a downside of 20% with a downside probability of 40%, according to the formula, the position that you can allocate for this bet is 0.6/0.2-0.4/0.2 = 1. In other words, the investor should commit 100% of his capital. If the possibility of upside is 40% instead of 20%, then the committed capital should be 0.6/0.2-0.4/0.4 = 2 or 200% - this means that you should use leverage to have 200% of your capital invested.

I know all of you are thinking that this is absurd, and all of you can feel that intuitively there is something wrong here.

Let us improve the approach to make it more practical. The above formula presumes that you can place a bet infinitely, which is not the case when you make a single bet on a stock. Let us now convert the formula into the betting form where a is considered as the capital committed that can be 100% lost (a=1) while b is replaced by R (=b/a) i.e., the ratio between the profit and loss. This modifies the formula into its more popular form:

$$f = p - \frac{q}{R}$$

This modification ensures that 'f' is always less than 1. So, the issue of borrowing is addressed. Let us now revisit the earlier example. If $p=60\%$, $q=40\%$, $b=20\%$, $a=20\%$ then $R=b/a=1$

$f=0.6\text{-}0.4/1 = 20\%$

what if $b=20\%$ and $a=40\%$

$f=0.6\text{-}0.4/0.5 = \text{-}20\%$

which means that the formula is suggesting that you assume the other side of the bet.

It is always good to look at the expected value before you apply the formula. In the first case it is $0.6*0.2\text{-}0.4*0.2 = 0.04$. We apply the formula only when the expected value is positive. It is logical that when the expected value is negative, which means that the possibility of making a loss is more than the possibility of making a gain, then it does not make sense to enter the bet.

Another way to calculate $f$ is using the edge to odds ratio. Edge refers to the expected value of the trade. Odds refers to the positive payout.

In the earlier example, we calculated the expected value as $0.6*0.2\text{-}0.4*0.2 = 0.04$. So, the edge is 0.04. Odds refers to the upside, which in this case is 0.2. Hence $f=0.04/0.2 = 20\%$.

Let us take two scenarios now with the same expected value.

| | Scenario 1 | | Scenario 2 | |
|---|---|---|---|---|
| p | 60% | 20% | 2.35% | 1000% |
| q | 40% | -20% | 97.65% | -20% |
| Expected Value or Edge | | 4% | | 4% |
| Odds | | 20% | | 1000% |
| f = Edge/Odds | | 20.00% | | 0.40% |

Both the scenarios have the same expected value. But scenario 1, where the probability of upside is high, the value of f is 20%, while in scenario 2, which is more like a lottery, the value of f is just 0.4%. Thus, the criterion automatically adjusts the position sizing according to the variability of the outcome.

The situation need not always be binary. Multiple outcomes along with associated probabilities can also be used.

For example, if the payoffs along with probability are as follows:

| Prob (A) | Gain/Loss (B) | Expected Value (A x B) |
|----------|---------------|------------------------|
| 60%      | 30            | 18                     |
| 20%      | 60            | 12                     |
| 20%      | -20           | -4                     |

The overall expected value is $18+12-4 = 26$. Expectation of positive outcome is $(18+12)/0.8 = 37.5$. In other words, the expected value can be converted into the binary form as $37.5 \times 0.8 - 20 \times 0.2 = 26$.

So, $f = 26/37.5$ or about 69%. Thus, for a bet with the above payoff, the criterion suggests a position size of 69%.

I can guess what you are thinking. Whatever be the payoff from the stock, should you be committing 69%, or in the earlier example, 20%, into one position? This does not make sense from a risk management point of view. What are we missing here? The Kelly criterion tells us how much of your net worth you need to bet repeatedly in a situation that offers the above payoff. When we apply it to the stock market, no two stocks are the same. The payoffs are also different. It is difficult to understand a company at a level where you can make such a large capital commitment. So, we need to modify the approach further and scale it down to an acceptable level.

The first step in this scaling down process is to define your risk appetite. No two investors are the same. Every investor has a risk tolerance. In this context, I will define risk appetite as the maximum capital expressed as a percentage of the portfolio you are willing to forego on one stock. In other words, risk appetite is the maximum capital you are ready to commit to a single company. Risk appetite depends on your confidence level in your conviction regarding a particular stock.

Let us say it is 10% for illustration purposes. This means that you are not ready to commit more than 10% of your portfolio to one stock, however attractive it is.

Once the risk appetite is defined, the next step is position sizing. The position you can take is the product of allocation as per the Kelly criterion and your risk appetite.

**Position Size = Risk Appetite x Kelly allocation**

In the earlier example, we saw that the Kelly allocation was 69% based on the payoff matrix presented. Now you superimpose your risk appetite on the suggested Kelly allocation. With a risk appetite of 10%, you can allocate $10 \times 69\% = 6.9\%$ of your portfolio to that opportunity.

We will now see how this works in real life. We will go back to the case study of the commodity company that we discussed in an earlier chapter.

For your convenience, I am reproducing the key statistics of the PBV data of the company.

| PBV | Value |
|---|---|
| Minimum | 0.88 |
| Maximum | 1.98 |
| Mean | 1.36 |
| Std. deviation | 0.3 |
| Median | 1.33 |
| No. of months | 85 |

The time that the stock has spent in the various PBV ranges is given in the following histogram.



PBV histogram

| <1.06 | 1.06-1.35 | 1.36-1.66 | >1.66 |
|---|---|---|---|
| 18% | 33% | 31% | 18% |
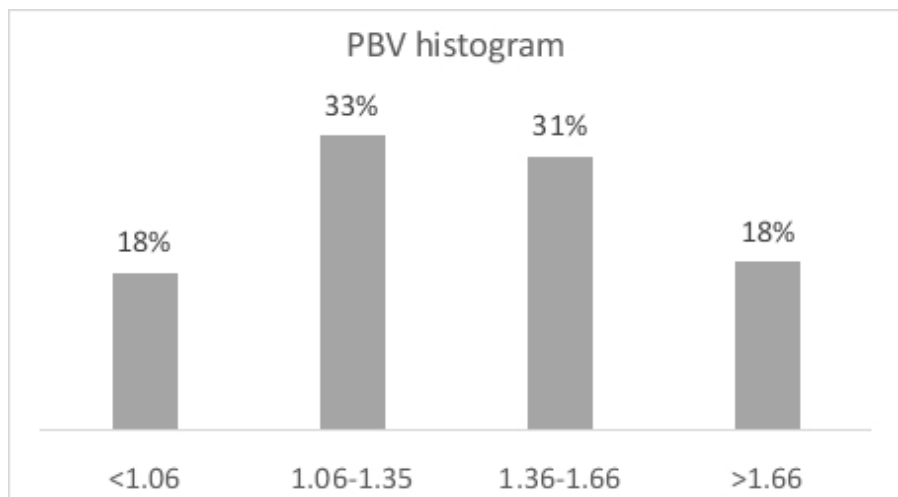
So, the stock spent 64% of the time in the PBV range of 1.06 to 1.66. It spent 18% of time below 1.06 with a mean of 0.96 and 18% of time above 1.66 with a mean of 1.81.

Let us assume that you feel the stock will continue to move in this range only. Also assume that at a particular point in time, the stock is available at 1x PBV. You construct the following payoff matrix based

on the following three assertions:

a) There is a 64% probability that the stock's PBV will revert to 1.33x, leading to an upside of 33%

b) There is a 18% probability of the stock PBV hitting 1.81, leading to an upside of 81%

c) There is an 18% probability that the stock PBV will decrease to 0.96. On a worst-case basis, it can even go down to 0.80 times PBV, leading to a downside of 20%.

The payoff matrix will be as follows:

| Probability | Gain / Loss % |
|---|---|
| 64% | 33% |
| 18% | 81% |
| 18% | -20% |

The edge will be 0.64*0.33+0.18*0.81-0.18*0.20 = 0.33

The odds will be (0.64*0.33+0.18*.81)/(0.64+0.18) = 0.44

As I mentioned in the earlier section, this step converts the situation into a two-payoff structure. The edge remains the same and will be 0.44*0.82-0.18*0.20 = 0.33 (*Subject to some round off errors*)

The Kelly allocation will hence be 0.33/0.44 or 75%. If your risk appetite is 10%, the position you can take is 10%x75%=7.5%. Thus, the initial allocation is finalised at 7.5%. We now get into the maintenance stage.

Assume that the stock has not given any negative surprises and appreciated and reached 1.25x PBV.

If the beginning value of the portfolio is 100 and all other positions remain the same, the revised portfolio value due to the appreciation of this stock will be

$$\frac{7.5 \times 1.25}{(100 + 7.5 \times 0.25)} = 9.2\%$$

This is an unlikely scenario as the assumption of other stocks remaining at the same level is unrealistic. They would have also probably gone up. But with 25% appreciation, the weight of the stock in the portfolio would have probably increased from 7.5%. Let us assume that the weight of the stock in the portfolio is now 8%.

At 1.25x PBV, the payoff matrix for the stock is recalculated as

follows:

| Probability | PBV | Gain / Loss % |
|---|---|---|
| 64% | 1.33 | 6% (1.33/1.25-1) |
| 18% | 1.81 | 45% (1.81/1.25-1) |
| 18% | 0.8 | -36% (0.80/1.25-1) |

Revised Edge $= 0.06*0.64+0.45*0.18-0.36*0.18 = 0.06$

Odds $= (0.06*0.64+0.18*0.45) /(0.64+0.19) = 0.15$

Kelly allocation $= 0.06/0.15$ or 40%

The revised portfolio allocation will be 10%*40% $= 4\%$.

This means that you need to book profits on 50% of your exposure to the stock.

Often you will find yourself in a dilemma as to what to do after some sharp increase in the price of the stocks you own that takes it closer to your target. On the one hand, you do not want to sell too early, while on the other hand, you do not want to let go of opportunities to book some meaningful profits. This approach can help you make such decisions more objectively.

Coming back to the initial payoff matrix, if you are more conservative and defined the payoff matrix as:

| Probability | PBV | Gain / Loss % |
|---|---|---|
| 60% | 1.33 | 33% |
| 40% | 0.8 | -20% |

Then,

Edge $= 0.6*0.33-0.4*0.2 = 0.118$

Odds $= 0.33$

Kelly allocation $= 36\%$

Portfolio allocation $= 3.6\%$

So, the approach suggests a much lower initial allocation which is more in line with your revised lower risk appetite.

The position size suggested by the framework depends on your expectation. This is similar to the valuation framework, where the value depends on your expectation. Conservative assumptions lead to lower allocation, and aggressive assumptions lead to higher allocation. The best thing about the framework is that as the valuations become expensive, the framework automatically suggests a lower allocation. When price increases and you feel there is no change in fundamentals to warrant a change in expectations, the framework helps you take

some money off the table but continue to participate in further upsides with a lower allocation.

A slight variation to this is the half Kelly approach. You will keep learning more about a stock you own over time as you monitor the position, track the results, go through the conference call transcripts, research notes, rating agency notes and other reports. As your knowledge of the company increases, so does the confidence. The extent of information how much ever you research a stock for the first time will be found wanting. In this context, you can consider a half Kelly position if you are investing in a new company, and after some time of holding and gaining more confidence, you can switch to the full Kelly allocation. Of course, you must scale down the position in accordance with your risk appetite.

Let us look at another illustration by revisiting the high growth home product company, which became a multi-bagger eventually that we discussed earlier in the section on growth. The initial expectation table when the company was available at less than book value and the market capitalization was 190 Cr was as follows:

| Scenario | Upside % | MCAP |
|----------|----------|------|
| No growth (A) | 35% | 257 |
| Mature Growth (B) | 97% | 374 |
| Super-normal growth for 5 years followed by mature growth (C) | 244% | 654 |
| Super-normal growth of 15% for 5 years followed by mature growth with a higher sustainable ROE assumption (D) | 324% | 806 |

Since all the expectations have a positive upside assuming your risk appetite is 10%, you allocate 10% of your portfolio to the stock. You also have to assign probabilities to these outcomes based on your analysis. Let us say you finally conclude that the payoff matrix is as follows:

| Scenario | Upside | MCAP | Probability |
|----------|--------|------|-------------|
| A | 35% | 257 | 5% |
| B | 97% | 374 | 20% |
| C | 244% | 654 | 60% |
| D | 324% | 806 | 15% |

The expected Market Capitalization (MCAP) is 5%*257 + 20%*374 + 60%*654 + 15%*806 = 601. The size of the position at various market capitalization levels will be as follows:

| Scenario | MCAP under the scenario | Probability | Expected return @ MCAP of | | | |
|---|---|---|---|---|---|---|
| | | | 350 | 450 | 550 | 601 |
| A | 257 | 5% | -27% | -43% | -53% | -57% |
| B | 374 | 20% | 7% | -17% | -32% | -38% |
| C | 654 | 60% | 87% | 45% | 19% | 9% |
| D | 806 | 15% | 130% | 79% | 46% | 34% |
| Edge | | | 72% | 33% | 9% | 0% |
| Odds | | | 77% | 52% | 24% | 14% |
| Edge/Odds | | | 93% | 64% | 38% | 0% |
| Position | | | 9.30% | 6.40% | 3.80% | 0% |

The expected value of MCAP is 601 Cr, and if the actual MCAP exceeds the expected value, the expected returns become negative. Thus, the expected MCAP becomes the MCAP at which position should become zero. If you decide to prune the position by regularly booking profits, the position size at every MCAP is given in the table. I will explain the calculation step by step for MCAP of 550 Cr.

Edge is the expected return at a given MCAP. For MCAP of 550 Cr the expected return under the scenarios A, B, C and D are -53% (257/550-1), -32% (374/550-1), 19% (654/550-1) and 46% (806/550-1). This leads to an overall expected return or edge which is calculated as

5%*(-53%) + 20%*(-32%) + 60%*(19%) + 15%*(46%) = 9%.

The odds represent the expectation of positive outcome which is calculated as:

{60%*(19%) + 15%*(46%)}/(60%+15%) = 24%

The Kelly position size is the edge/odds, or 9%/24% = 38%.

Position in the portfolio is the Kelly position size multiplied by your risk appetite, which we have taken as 10% leading to a portfolio position of 3.8%.

Thus, we start the investment by making a 10% allocation to the stock at 190 Cr. When the MCAP hits 550 Cr, you have already made 189% returns. Now, if you want to maintain your investment, the position sizing framework advises you to book profits to such an extent that the portfolio weight of the stock falls to 3.8%, i.e., a reduction of 6.2% from the initial position.

We have assumed that the expectations will remain static with time and only the stock value appreciates to reach our expected value. However, we know that with time the expectations should also change due to roll forward, which we discussed earlier, and also the company's performance in the interim, which will lead us to revise our

expectations and the probability that we ascribe to each scenario. Based on the revised scenario at each assessment, the investment decisions have to be made to manage the portfolio.

Rarely we get stocks at reasonable valuations with a long runway for future growth, and in these cases, the market does take the price to levels well beyond our expected value. The decision needs to be taken depending on the confidence you have in the company's ability to deliver the market-implied expectations, and the presence or absence of alternate investment ideas from a risk versus reward perspective.

The position sizing exercise can also help you to become a better investor by guiding you to take small but meaningful exposures to situations where you have a non-linear payoff. It could be situations like exposure to a drug discovery company or a foray into a new venture, where you estimate the probability of success as low, but the upside if the bet works in your favor can be extremely high. For example, consider a situation in which the success probability is only 1%, but the upside upon success is 500%.

Warren Buffett says that investors are better served when they stay within their circle of competence. This refers to the select industries where you have developed useful knowledge through your study or experience. I have found that allocating a small percentage of your portfolio, say about 5% overall over multiple positions, to experiment with the new knowledge you have acquired helps you expand your circle of competence and become a better investor over time. The extent of monitoring and updating you do when a position is present in the portfolio is much more than what you do when it is not a part of the portfolio. It probably happens because of a much higher emotional involvement that you have even though the position is so small that it barely moves the needle as far as your portfolio performance is concerned. This small allocation can have several tail positions with weights as low as 0.1-0.2%. Some investors call it a tracking position. Portfolio positions in future often come out of this universe.

# Making use of the Ulysses Pact

Until now, we discussed the various quantitative techniques that we can use for valuing a stock and position sizing. The last step involves the operational aspects – the actual buying or selling. In this section, I want to discuss an approach I have personally found useful. This approach is just a suggestion, and once you see why I follow this approach, you can customize it.

Homer, in Odyssey, talks about an unusual arrangement Ulysses made with his men. Ulysses wanted to hear the song of the Sirens; the beautiful women whose captivating songs make the listeners lose their rationality. The listeners drift to a state of mind where they cannot do anything and eventually die. Ulysses wanted to listen to the songs and simultaneously avoid the adverse outcomes. Ulysses filled his men's ears with bee wax and had himself tied to the mast of his ship. He instructed his men to disallow him to go under any circumstances. Thus, Ulysses achieved the twin objective of both listening to the songs and protecting himself.

In an interesting paper, *The Heat of the Moment: The Effect of Sexual Arousal on Sexual Decision Making*, Dan Ariely concluded that the decisions made by students who took part in the experiment were strongly influenced by whether they made the decisions in a state of arousal or a neutral state. Particularly telling was a series of questions on unsafe sexual practices. It showed that the participants exhibited similar levels of knowledge regarding unsafe sexual practices, but in the aroused stage, they were less likely to use condoms.

The ability to decide correctly is impacted adversely in "the heat of the moment". When you are staring at the screen during severe volatility in the market, there is a low probability of you being in the right frame of mind. When buy or sell decisions are taken during such heat of the moments, the chances of being wrong increases. Maybe when you reflect upon your actions during this period, you may feel that you could have done better. The swings in the market, especially on volatile days, are like Siren's songs. They may make you irrational albeit temporarily.

There are days when the whole market is down 3-4%, and many stocks are down more than that. There could be a temptation to buy stocks that have fallen a lot. You may do what Peter Lynch calls,

*Watering the weeds and cutting the flowers.* If a stock's price does not decrease much in a major market crash, it is probably telling you something about the company's strength rather than it being the opportunity to shift out of it. You may even be tempted to shuffle your positions. The actions that flash in your mind may make sense to you then. It may result in unnecessary churning of the portfolio leading to increased tax incidence.

You can use the Ulysses Pact to your advantage by binding yourself to act in a pre-determined way using self-imposed constraints. A few examples of how this can be used in investments include:

a)  Keep surplus funds in a liquid fund. This would mean that whenever you need to deploy the funds, you have to redeem the funds and wait for at least one day to see the funds get credited to your account. This will ensure that you sleep over your decision to deploy the surplus funds for at least a night. You will be surprised at how many times you wake up with a changed mind.

b)  If you want to do a staggered selling, do it at a fixed time on a particular day of the week – say Thursday at 3 PM.

c)  Some brokerages allow placing orders at night, which will be executed when the market opens the next day. This allows you to place the order based on your convictions when the market noise is not there.

d)  If you do not intend to trade in derivatives, it is a clever idea to ensure that you disable the privilege to trade in derivatives. Even if you want to use derivatives go through the complete process of enabling it. This will ensure that you use it only when you feel that the opportunity is worth the effort.

e)  Automating the operational aspects ensures that you do routine things without taking decisions. At every step where you have to decide, it may make sense to put obstacles preventing you from taking decisions in the heat of the moment. Human beings are programmed to act in a fight or flight manner, which may not be the right strategy in the stock market.

# A Tale of two companies

Let us conclude with this analysis of two companies where we will try using the primary valuation frameworks that we discussed. Both the companies belong to the same sector. The snapshot of the first company is as follows:

| | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 | CAGR |
|---|---|---|---|---|---|---|
| Net Sales | 248.08 | 296.37 | 366.02 | 359.07 | 351.35 | 9% |
| EBITDA | 46.05 | 53.94 | 62.74 | 76.46 | 84.72 | 16% |
| EBIDTA Margin % | 19% | 18% | 17% | 21% | 24% | |
| PBT | 38.58 | 44.69 | 53.57 | 65.02 | 72.58 | 17% |
| PAT | 28.25 | 32.51 | 38.36 | 45.15 | 48.61 | 15% |
| Net worth | 124.72 | 150.91 | 177.55 | 214.03 | 262.34 | 20% |
| ROE % | | 26% | 25% | 25% | 23% | |
| MCAP | 192 | 361 | 846 | 981 | 1819 | |

We can see that the history of the company looks excellent. The sales CAGR has been 9%. Improvement in operating margin has driven the EBITDA CAGR at a healthy 16%. The PAT has also compounded at 15%. The ROE has been healthy at about 25%. The company's market capitalization has also kept pace with this remarkable performance. The stock has almost been a ten-bagger, with MCAP increasing from 192 Cr to 1,819 Cr over five years.

If we apply the multistage growth model with a 15% high growth phase for five years, we get the PBV as

$$PBV = \frac{(0.25-0.08)\times1.08\times1.15^5}{(0.12-0.08)\times1.12^5} = 5.24 \times$$

So, the fair market value can be 5.25x262.34 = 1375 Cr.

If we extend the growth phase to 10 years, we get a fair PBV of 6.82x, resulting in a market capitalization of almost 1,800 Cr. This number seems closer to the market's expectation at the end of year 5. The numbers suggest that the company is on a high growth path and the market capitalization implies a 15% growth over ten years as the market-implied expectation.

Let us now take the second company.

|                    | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 | CAGR |
|--------------------|--------|--------|--------|--------|--------|------|
| Net Sales          | 351.35 | 384.21 | 352.01 | 317.09 | 261.54 | -7%  |
| EBIDTA             | 84.72  | 82.66  | 76.35  | 74.97  | 61     | -8%  |
| EBITDA Margin %    | 24%    | 22%    | 22%    | 24%    | 23%    |      |
| PBT                | 72.58  | 67.25  | 59.36  | 56.22  | 42.86  | -12% |
| PAT                | 48.61  | 44.66  | 39.26  | 45.28  | 32.3   | -10% |
| Net worth          | 262.34 | 296.91 | 326.03 | 350.91 | 383.12 | 10%  |
| ROE %              |        | 17%    | 13%    | 14%    | 9%     |      |
| MCAP               | 1819   | 1391   | 674    | 313    | 521    |      |

In this case, it is evident that we have a lousy company. Sales CAGR has been negative. While margins are in line with company 1, the fall in turnover is worrisome. Making the situation worse is the bloating net worth, indicating that the company is becoming a cash hoarder. There should not be much incremental capital requirement to support this negative growth. The ROE, which begins at a healthy 17%, has dipped to an abysmal 9%.

How much value can you give to company 2? You may think that even a 1x PBV is a stretch for a company with these reported financial statements. At 1x PBV, the fair market value could be 383 Cr. Even after the significant price correction, the market capitalization of 521 Cr probably means that investors are still willing to give the company some benefit of the doubt.

Let me introduce another company now with the following financials.

|            | Year1 | Year2 | Year3 | Year4 | Year5 | Year5 | Year6 | Year7 | Year8 | Year9 |
|------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Net Sales  | 248   | 296   | 366   | 359   | 351   | 351   | 384   | 352   | 317   | 262   |
| EBITDA     | 46    | 54    | 63    | 76    | 85    | 85    | 83    | 76    | 75    | 61    |
| EBIDTA %   | 19%   | 18%   | 17%   | 21%   | 24%   | 24%   | 22%   | 22%   | 24%   | 23%   |
| PBT        | 39    | 45    | 54    | 65    | 73    | 73    | 67    | 59    | 56    | 43    |
| PAT        | 28    | 33    | 38    | 45    | 49    | 49    | 45    | 39    | 45    | 32    |
| Net worth  | 125   | 151   | 178   | 214   | 262   | 262   | 297   | 326   | 351   | 383   |
| ROE %      |       | 26%   | 25%   | 25%   | 23%   |       | 17%   | 13%   | 14%   | 9%    |
| MCAP       | 192   | 361   | 846   | 981   | 1819  | 1819  | 1391  | 674   | 313   | 521   |

I hope you have now got the drift. Both the companies are the same. The first company is its performance from FY13 to FY17 and the second company is its performance from FY17 to FY21. I am giving this example to tell you how projections can go horribly wrong and how critical it is to understand the business fundamentals. While this is an extreme case, business cycles can throw the expectations into the dustbin. So much for projecting till perpetuity!!! But finally, we do need some starting point to assess the fair value.

Buying at a margin of safety to intrinsic value is boldly written in several textbooks on value investing. But what is intrinsic value or fair market value is seldom clearly explained. Benjamin Graham tried to equip retail investors with a number for intrinsic value.

Bruce Greenwald talked about an Earnings Power Value approach. In *Expectations Investing* Michael Mauboussin talks about arriving at price implied expectations using the free cash flow approach. Here we are trying to do the same using another approach. None of the techniques is perfect, but every approach adds more value to your analysis. Indeed, if my techniques help me churn out multi-baggers and I have a 100% success rate, why should I share these techniques with you? When looking at the attractiveness of the stock price, you must compare it with something. The approach suggested is just an attempt to provide you with that "something" against which you can compare the current price.

Coming back to the example, it is easy to get carried away by the approach and start spending lesser time on the business fundamentals. Visit one of the sites that give summary financial data over the past many years. Put an arrow at the end of the line and apply this new "magic formula". If the calculated value is more than the current market capitalization, there is a margin of safety. Please **do not** adopt this approach unless you want some rude shocks. Putting an arrow at the end of the line is injurious to investor wealth.

As I mentioned earlier, valuation followed by position sizing is the final stage of analysis of an investment process. Before that, you have to do the fundamental analysis of the business and convince yourself that there are no red flags. This is especially important as you rely on accounting profits for value estimation instead of the more commonly used methods like DCF, which relies on cash flows. A few aspects that you need to consider include:

a)  Sanity checks on cash flows and reliability of accounting statements.

b)  Check the corporate governance angle. Stocks may be cheap if corporate governance standard is not up to the mark, and good corporate governance is non-negotiable.

c)  The example of two companies in this section demonstrated the impact of the industry cycle on business performance. Understanding the industry cycle is critical – long duration cycles are often mistaken for secular growth.

d)  Unusual short-term tailwinds – for example, China banning the production of some chemical may lead to the temporary outperformance of some company that manufactures the chemical. Understanding the sustainability of a witnessed trend is critical.

e)   Senior management remuneration -always good to see whether this is reasonable and in line with peers.

The list goes on.

# Simple but not easy

Renowned fund manager Richard Oldfield called the investing *process simple but not easy*. In the delightful book by the same name, Oldfield shares his experiences, many of which offer brilliant insights into the asset management industry. The general expectation of investors is that when a stock is bought at a reasonable price and the business does well returns automatically follow. But this need not always be the case. Let me present the financial snapshot of a company which ticks all the boxes as far as business performance is concerned:

|  | FY17 | FY18 | FY19 | FY20 | FY21 | CAGR |
|---|---|---|---|---|---|---|
| Sales | 24,616 | 30,599 | 38,395 | 35,452 | 26,023 |  |
| Operating Profit | 2,592 | 3,314 | 3,294 | 3,990 | 4,700 | 16% |
| OPM % | 11% | 11% | 9% | 11% | 18% |  |
| PBT | 2,360 | 3,055 | 3,234 | 3,111 | 3,968 | 14% |
| PAT | 1,706 | 2,078 | 2,155 | 2,698 | 2,949 | 15% |
| Dividend payout % | 22% | 32% | 70% | 70% | 58% |  |
| Net worth | 8,094 | 9,720 | 10,066 | 10,953 | 11,650 | 10% |
| ROE % | 26% | 26% | 22% | 27% | 27% |  |

The company backed by PSUs is in the business of re-gasifying liquefied natural gas and selling it to customers. The company has assured off-take arrangements with most customers, ensuring the stability of cash flows. On the input side also, they have a long-term supply arrangement. They commissioned their second plant, and a significant volume ramp-up is expected. Assume that you are in FY17, and you know that the future earnings will be exactly like this.

How much would you pay for the business? We have a business with about 26% ROE, and an earnings CAGR of 26% is expected over the next five years. If we use our formula for estimating the fair PBV of growth companies with mature growth of 8% after the five years, we get the PBV as:

$$PBV = \frac{(26\% - 8\%) \times (1 + 8\%)}{(12\% - 8\%)} \times \left(\frac{1 + 15\%}{1 + 12\%}\right)^4$$

$$= 5.40$$

So, you estimate the fair value as 5.4*8094 = 43,707 Cr. The company's market capitalization as of FY17 was 30,218 Cr implying a PBV of 3.73x. So, you expect an upside of about 44%. The movement of the market capitalization of the company over the next four years was as follows:

| | FY17 | FY18 | FY19 | FY20 | FY21 |
|---|---|---|---|---|---|
| Market Capitalization | 30,218 | 34,695 | 37,575 | 29,978 | 33,735 |
| P/BV | 3.73 | 3.57 | 3.73 | 2.74 | 2.9 |

This is a situation which often happens. The business does well. The company generates good free cash flows, pays healthy dividends, and maintains the ROE. Things go as per expectation except for the stock price. Five years is usually a long enough time by which valuation anomalies are rectified. But the wait can be longer for often inexplicable reasons.

Apart from risk management aspects, this is also a reason it makes sense to diversify your holdings. It may be that your assumption of a mature growth rate beyond five years may not materialize. It may also be that the company's ROE profile would suffer due to capital expenditure in some long gestation projects. It may even be that Mr. Market may simply not like your stock. Having positions in businesses with good upside potential, but not quite related to each other helps to improve the odds of generating a reasonable return from the portfolio. Like the mythical island where every inhabitant is above average, every stock in the portfolio usually has an upside potential much higher than what the portfolio ultimately delivers, thanks to the mood swings of Mr. Market and your inaccurate assessments.

The valuation frameworks suggested in this chapter need not always work even if everything happens according to your expectation, as there are several moving parts. This may also be offset by the excellent performance of positions where the experience may not be what was initially envisaged. For example, a company getting acquired at a high premium to the current market price may be a trigger you would not have expected when making the initial investment. It may also happen that despite your best effort you failed to spot a governance issue in the company, and the stock suffers a massive correction. These are all noises.

Your job is to operate within a consistent process, which is to buy

stocks with an adequate margin of safety as per your conservative analysis with the help of any valuation framework that you feel is appropriate. Some ideas will work, some will not, and a few others may cause losses. But if the process is correct, the portfolio does well overall. You are doing well as long as you can generate reasonable returns when your expectations play out and not lose much when you go wrong, thanks to the margin of safety inbuilt into your purchase price. Rahul Dravid, considered one of the most successful Indian batters, said, *"Back in my time, a half-century was considered a good score. Across formats, I batted 604 times for India. I did not cross 50 runs 410 times out of those innings."*

In investments, you need not get it right every time to achieve a reasonable return. Intense research to understand the business and a consistent approach to valuation are probably all that matters. Control the process and outcome will follow. It is simple but not easy.

# Generating returns "silently"

This is one chapter that has nothing quantitative about it, but I feel will help you make the right decisions. The valuation and position sizing exercise ultimately culminates in the decision to buy, sell, hold, or do nothing. Even taking no action is a decision. It is useful to bounce your ideas to an individual or a group of individuals whom you respect. Warren Buffett has Charlie Munger as a partner, and Joel Greenblatt has Robert Goldstein as a partner. Being a member of a small group of like-minded independent investors supporting each other should help you improve the quality of decision making. I am not saying that the group needs to arrive at a consensus. It is just to ensure that the individual making the decision receives a few independent views, some of which can help the person fine-tune the assumptions leading to the decision. One of the advantages of the proliferation of social media like WhatsApp, Facebook, LinkedIn, Twitter, or Reddit is that they all are powerful platforms that can bring like-minded people together.

However, the social media platforms make it a lot more effort to do something that we could do more easily earlier – the ability to remain silent. Former President of the USA Calvin Coolidge said, *"I have noticed that nothing I never said ever did me any harm"*. The social media platforms have led to many well-meaning investors now indulging in a race to increase their number of followers. When the number of followers increases, people feel a moral need to provide the followers with regular fodder. One of the worse things that can happen now is going public about a stock you like. If your holding is large enough, statutory disclosures have to be made, and you can do nothing about it. But if that is not the case, I seldom understand the motivations behind an investor going public about his holding.

We have discussed many valuation frameworks and the things that remain constant across these frameworks are that the models have to be constantly updated, the assumptions have to be regularly revisited, and the revised fair value worked out. In this process, it may so happen that what made sense during the previous assessment does not make sense anymore. Remaining silent gives you the flexibility to act comfortably without worrying about what you have communicated to your followers.

I know a brilliant investor who has a fantastic 25-year record. A few

years back, he recommended a stock that he liked in a widely circulated investment magazine. The idea was circulated widely on social media. A couple of years later, the company ran into corporate governance issues and had to be referred to the NCLT. The stock has now become worthless. The reputation that the investor built over 25 years was bashed to smithereens.

Providing a stock recommendation in public is a game of negative expected value. It is like a beautiful young lady approaching a hunk to help her open a bottle where the cap is too tight. If the hunk can open the bottle cap, he gets nothing as it is expected that he would open the bottle. If he cannot open the bottle cap, his reputation suffers as he cannot do something as trivial as opening a bottle cap. Similarly, if you recommend a stock as an expert, the recommended stock going up would be something expected as you are the expert. If it does not go up, then your expertise is questioned. If the company goes bankrupt, then your reputation is destroyed.

I have seen people making stock recommendations and then adding that they are not SEBI registered advisors. They add that the readers should invest at their own risk or consult their financial advisor. The question is why you will want to recommend a stock in the first place if the reader anyway has to consult his financial advisor. When you make such a recommendation, and the stock price goes up, parading it later in front of the readers does not add even one basis point to your portfolio return.

I wonder why fantastic investors write columns about the stock they like most in magazine issues around Diwali or New Year. Even if a stock is their high conviction bet, I am not sure the investor has allocated more than 8-10% of his portfolio to that idea. When he speaks about such an idea in public as the stock whose price he thinks will go up, he is probably committing a much higher percentage of his reputation to those 1,000 words in the issue. This is a classic, *Heads I lose and tails I do not win much* kind of a situation which is exactly opposite of what the value investor wants.

So, the big question is, what is your ultimate objective? If your objective is to generate good returns at the portfolio level, then giving stock recommendations to a group of unknown people on social media will not help you. It will only add to the distraction level. If you have fans who buy a stock after you recommend it, and you sell it later for some reason, you may even be questioned for misleading gullible investors.

Another big problem is that the quality of decision making can suffer due to going public with your stock ideas. The commitment and consistency principle in behavioural psychology says that the human

mind tries to stick to initial thoughts and actions. This helps the person to be perceived as someone stable, rational, and trustworthy. When you make a recommendation and facts change, this bias may force you to look for other facts, which you may not have considered to justify your sticking to the initial recommendation. Nimble footedness is a necessary requirement for any value investor, and going public with your ideas will add, say a two-tonne weight to your feet, thereby restricting your ability to move. It is difficult for the human mind to admit in public that what you recommended has not panned out the way you expected, and hence you are exiting at a loss. You can try to ignore your recommendation and focus on the ones that work. But you will always have followers to point out your failures for every success you want to display and get accolades. Adulation on social media can build up very quickly when you get your recommendations right. But the same adulations can turn into brickbats quickly when the recommendations lead to some followers blindly investing and losing money. The higher you go harder you fall.

Celebrated mutual fund managers have also borne the brunt of the commitment bias. They may have allocated a sizeable percentage of their funds to some sector; the salespeople force them to talk about this in their investor conferences and bind them to the idea. Mutual fund managers are on a sticky wicket because their portfolio comes out every month. So, they are making their positions known to the outside world frequently. Publishing your portfolio every month is akin to giving your recommendations. If they want to change their position, they should overcome their commitment and consistency bias and admit that they erred. This is one reason the mutual fund managers seldom adopt a differentiated approach and generate less than benchmark returns after fees.

If you plan to build a large fan base to eventually monetise the base, it is a different game altogether. Social media is a fantastic way to build a clientele if you want to solicit clients to subscribe to your newsletter, invest in your portfolio management scheme, or purchase your portfolio advisory services. Here again, I have found people who talk about their investment principles, process, research capabilities, and audited performance figures at an aggregate level survive much longer than the *"I told you, this stock is going to go up"* – kind of advisors. In investing, a hit rate of 50-60% should give you adequate returns. But if one out of three recommendations do not perform, it can potentially destroy your reputation and create unnecessary negative energy in your timelines. People who solicit business have no option. But if you are focused only on portfolio returns, then silence is as important a strategy as anything else.

# About The Author

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Sharad S Ramnarayanan is a finance professional currently working as the Appointed Actuary of The New India Assurance Company Limited in Mumbai. He did his Chemical Engineering from ICT, Mumbai and PGDM from MDI, Gurgaon. He is a certified Financial Risk Manager (FRM) and a Fellow member of Institute of Actuaries of India (FIAI). Prior to joining The New India Assurance Company Limited Sharad has worked as an investment professional in Birla Sunlife Asset Management Company Limited, Pari Washington Company Advisors Pvt. Ltd. and Tactica Capital. He has also worked as a Finance professor in Asian School of Business.

# Books By This Author

## Retire with dignity: A do it yourself retirement guide for the 40+

"Retire with Dignity" has been written to provide the readers with approaches that may be adopted to ensure that issues related to money don't affect their quality of life post-retirement. It will help the readers to assess what they have with them today and what they need to do tomorrow to end up with enough resources that help them lead a life of dignity. Personal finance books usually rely on one size fits all thumb rules. Instead, this book acknowledges that everyone is different with different needs. Hence, a generalized approach that each reader can customize according to his/her needs has been provided. A step by step approach that can be followed on a simple spreadsheet to arrive at the elusive number that can set you financially free is described. This book will provide you with the much-needed tools that will aid your decision making about the everchanging landscape of retirement planning.